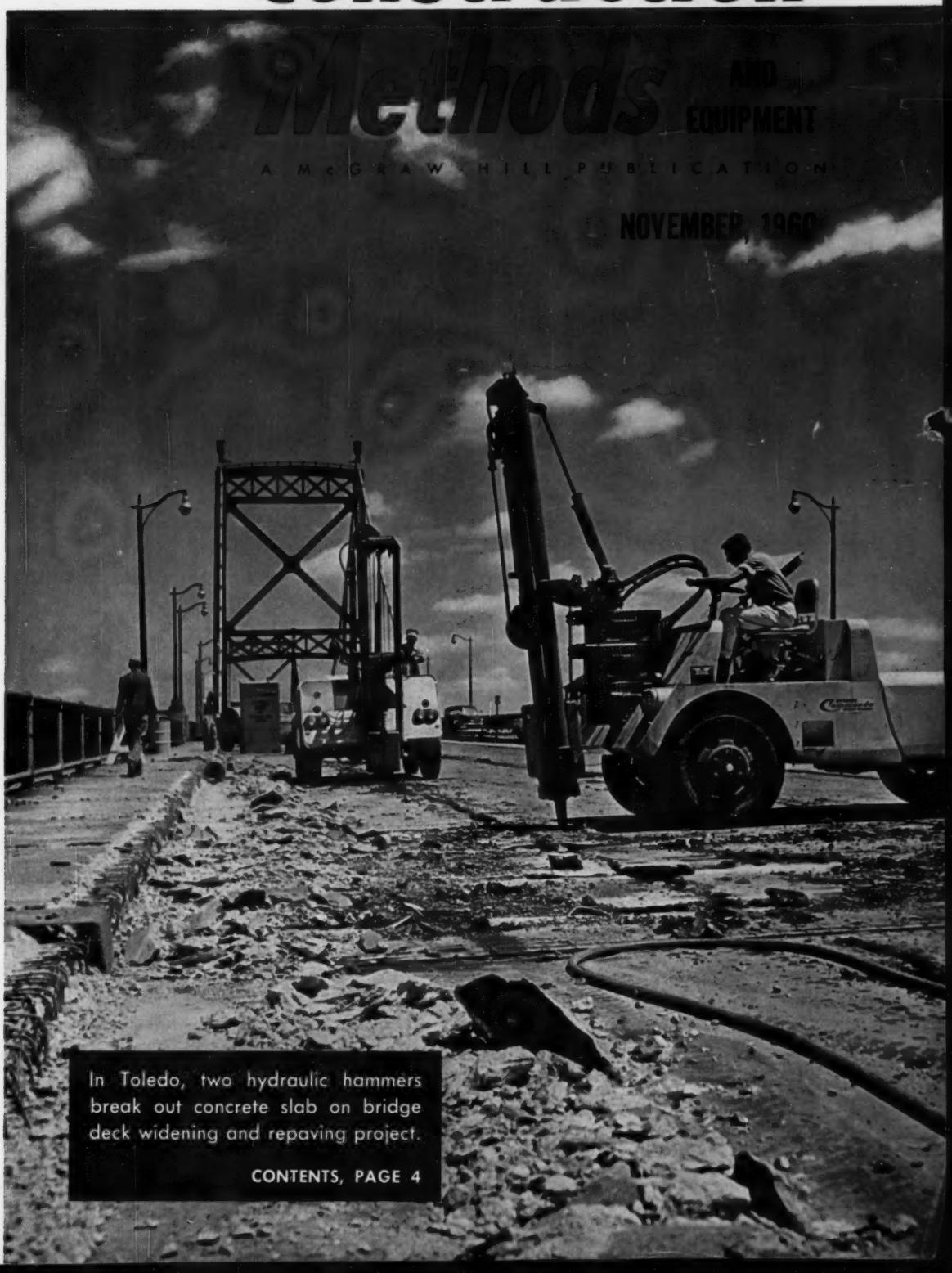
PRICE $1.00

# Construction Methods AND EQUIPMENT

A McGRAW-HILL PUBLICATION

NOVEMBER, 1960



In Toledo, two hydraulic hammers break out concrete slab on bridge deck widening and repaving project.

CONTENTS, PAGE 4

# "Our profit on the Pauls Valley School job depended on POZZOLITH"

**GENE HUDGENS,** Owner
E. P. Hudgens Construction Company
McAlester, Oklahoma

**LOW COST** in thin-shell concrete construction utilizing POZZOLITH is demonstrated on the Pauls Valley School project. Over-all cost on this 53,000 square foot job was just $10.00 per square foot. This includes partial air-conditioning, heating and insulation, plus sound-proofing and equipment for the science and home economics rooms and stage.

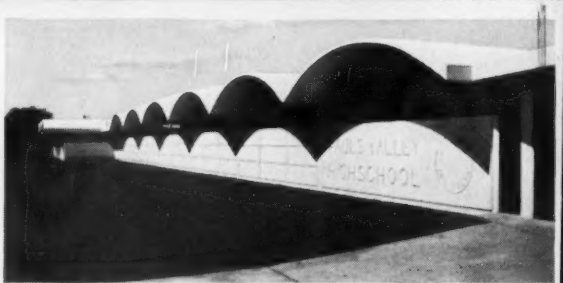
"The Pauls Valley School was a tough one to bid—because we had no criteria on which to base costs for this unique architectural concrete structure.

"At the start, our concrete test cylinders weren't giving us the 4,000 psi we needed, and we kept adding cement . . . up to 9 sacks a yard. We couldn't stand that expense so we called in Jim Sprouse—the local Master Builders field man—to look into POZZOLITH. That was the turning point on the job. POZZOLITH concrete gave us exceptional plasticity with the low slump we needed. Our test cylinders came right up to strength with only 5.8 sacks of cement.

"With our Oklahoma winds—concrete sets up almost while you look at it. POZZOLITH Retarder delayed the set up to 3 hours giving us greater flexibility in handling, placing and finishing . . . letting us do a better job with half the finishers. That was *another* important saving.

"Though I've known of POZZOLITH for a long time, I had to *work* with it to really see its value. Thanks to Jim Sprouse and his company's product we got a fair profit on this job."

**For lowest cost-in-place—superior quality concrete—there's no equal to POZZOLITH. Call in the local Master Builders field man to demonstrate how POZZOLITH can help put you ahead on your current job.**



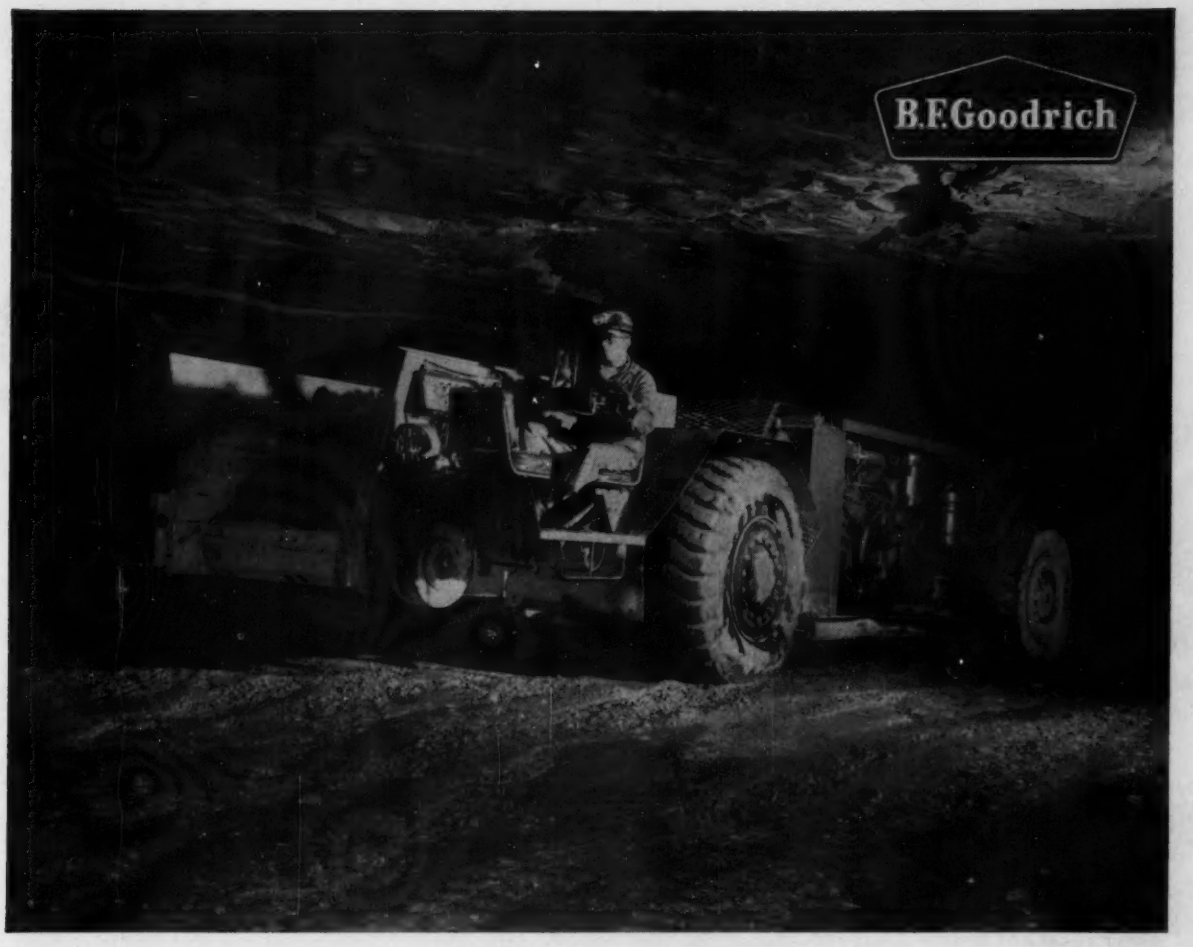
**PAULS VALLEY HIGH SCHOOL,** Pauls Valley, Oklahoma. Architects and Engineers: Jack L. Scott and Associates, Oklahoma City, Oklahoma • Owners: Pauls Valley Board of Education • General Contractor: E. P. Hudgens Construction Company, McAlester, Oklahoma.

*The Master Builders Company*
*Division of American-Marietta Co.*
*Cleveland, Ohio*
*World-wide manufacturing and service facilities*

**Our 50th Year**

**MASTER BUILDERS**
**POZZOLITH***

**POZZOLITH** *is a registered trademark of The Master Builders Co. for its concrete admixture to reduce water and control rate of hardening and entrainment of air.*



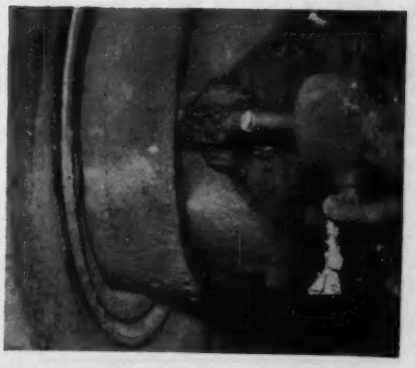

# Hi-Torque brakes make underground hauling safer; hold 44 tons on 20% grades

This shuttle car is one of several KW-Dart vehicles in use at the White Pine Copper Company mine at White Pine, Michigan. The cars are equipped with B.F.Goodrich Hi-Torque brakes, designed for heavyweight off-the-road vehicles.

Each car weighs 44 tons fully loaded with copper ore. White Pine reports the ability of Hi-Torque brakes to handle such heavy loads safely is an outstanding advantage. With full loads, the vehicles hold on steep grades encountered in the mine, ranging up to 20 percent.

The cars are being used on a round-the-clock basis, 7 days a week, with brakes applied most of the time the vehicles are moving. Yet in several months of operation no maintenance or replacements have been required.

Investigate Hi-Torque brakes for your heavy duty vehicles...now available on several makes of equipment. For booklet write *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. CM-11, Troy, Ohio.*

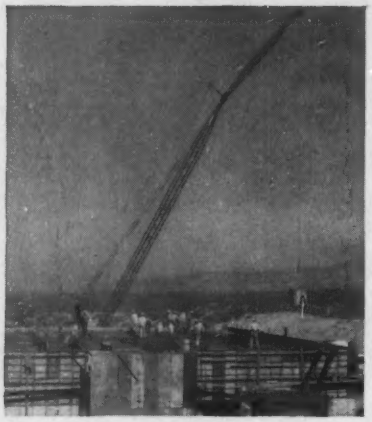


Closeup of Hi-Torque brakes on shuttle car wheel. The cars are used over hilly, rocky and muddy terrain.

**B.F.Goodrich Hi-Torque brakes**

*Circle 1 on Reader Service Card*

# 5625 Sq. Ft.



## Speed in Forming Symons Steel-Ply Forms

## . . . Keys Rocket Progress at Vandenberg Air Force Base

By discarding traditional forming methods in favor of prefabbed, lightweight, Symons Steel-Ply Forms, a heads-up piece of construction planning has reduced time and cost estimates for a 25,000-yard concrete job at Vandenberg Air Force Base, California. The average small 10-man carpenter gang erected up to *5625 square feet in a day.*

96 percent of the 80,000 square feet of total forming area was completed with Symons Steel-Ply Forms, fillers, corner pieces and necessary hardware. About 20,000 square feet of forms, reused, formed the total surface. The forms were used successfully for haunch building, forming suspended floor slabs and beams, all types of walls, heavy mass concrete, and they were even used on one side of the flame-bucket pour.

Advance detailing and shipment of forms from stock saved at least a month's valuable carpenter-gang time in getting the job under way. Complete Vandenberg story will be sent upon request. Symons Steel-Ply Forms can be rented with purchase option.

**NEW Extension Angle**

12" long with detail on each end for connection to Symons Steel-Ply Panels and Fillers. Designed for ¾" plywood facing.

COMPLETE INFORMATION AVAILABLE ON REQUEST

Symons

**SYMONS CLAMP & MFG. CO.**

4255 Diversey Ave., Dept. L-O, Chicago 39, Ill.
Warehouses Thruout the U.S.A.

MORE **SAVINGS** FROM **SYMONS**

*Circle 2 on Reader Service Card*



# Construction Methods AND EQUIPMENT

**NOVEMBER, 1960**



*Publisher*—**Robert F. Boger**

*Editor*—**Henry T. Perez**

*Associate Editors*—**James G. Ripley**
San Francico: **L. L. Wise**
Washington: **V. B. Smith**

*Assistant Editors*—**William G. Mooney**
**John Silinsh**
**Richard L. Bode**

*Presentation Editor*—**Joseph J. Fries**
Assistant: **Joseph R. Knisley**

*Editorial Secretary*—**Rosemary McKenna**

*Business News:*—Manager: **Elsie Eaves**
Editor: **James H. Webber**

*McGraw-Hill World News*—Director: **John Wilhelm**
Managing Editor: **Margaret Ralston**

*Domestic News Bureaus:*

ATLANTA: B. E. Barnes • CHICAGO: Steward W. Ramsey
CLEVELAND: Arthur Zimmerman • DALLAS: Marvin Reid
DETROIT: Donald MacDonald • LOS ANGELES: Kemp Anderson
SAN FRANCISCO: Jenness Keene • Washington: G. B. Bryant, Jr.
SEATTLE: Ray Bloomberg

*Foreign News Bureaus:*

LONDON: John Shinn • PARIS: Robert Farrell • BONN: P. Forbath
MEXICO CITY: Peter Weaver • BEIRUT: O. M. Marashian
CARACAS: John Pearson • MOSCOW: Ernest Conine
TOKYO: Sol Sanders • RIO DE JANEIRO: Leslie Warren

*Advertising Sales Manager*—**David J. McGrath**

*Circulation Manager*—**E. F. Bressler**

MEMBER

A McGRAW-HILL PUBLICATION



VOLUME 42 NUMBER 11

CONSTRUCTION METHODS AND EQUIPMENT, November 1960. Established in 1919. Published monthly by McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948) Founder.

**Editorial, Executive, Circulation, and Advertising offices:** McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. **Officers of the Publications Division:** Nelson L. Bond, President; Shelton Fisher, Wallace F. Traendly, Senior Vice Presidents; John R. Callaham, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. **Officers of the Corporation:** Donald C. McGraw, President; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary.

**Subscriptions are solicited only from persons engaged in construction or in supplying the construction industry. Position and company connection must be indicated on subscription orders.**

United States subscription rate for individuals in the field of publication $2 per year, single copies $1; foreign $15 per year, payable in advance. Second class postage paid at New York, N. Y., and at additional mailing offices. Printed in U.S.A.


Title registered in U.S. Patent office ©Copyright 1960 by McGraw-Hill Publishing Co., Inc.—All rights Reserved.


UNCONDITIONAL GUARANTEE—We agree, upon request direct from paid-up subscribers to our New York office, to cancel any subscription if CONSTRUCTION METHODS & EQUIPMENT'S editorial service is unsatisfactory, and will refund the proportionate subscription price of any unmailed copies.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, CONSTRUCTION METHODS AND EQUIPMENT, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone if any. If possible, enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to CONSTRUCTION METHODS AND EQUIPMENT, 330 W. 42 St., N.Y. 36, N.Y.

# RUGGED ROCK SHOVEL

# FAST CYCLE DRAGLINE

**Stripping a hill of rock,** the "85-A" shovel combines powerful crowding action with smooth swings, loads out trucks fast. Dipper stick made of "T-1" steel. Air dipper trip for fast dump cycles.

**Long reach of this 70-ft. boom** speeds work as this "85-A" dragline dredges out a pond. Lorain's exclusive Square-Tubular-Chord boom is lighter and stronger, provides longer reaches, bigger capacities.

## CONVERTIBILITY MEANS WORKABILITY WITH A LORAIN 85-A

Many rigs are convertible in name only. When it comes to on-the-job performance they show up as one-purpose machines.

Not the 2½-yard Lorain 85-A. It converts so easily that field changes are a breeze. On the job, it has the power and control to pay off on all kinds of work. Everything from tough shovel and hoe digging to dragline, clamshell or crane operations.

The "85-A" gets its versatility from its design. There are three power shafts for simultaneous hoist, swing and travel . . . two-lever "Joy-Stick" air power controls that blend operations for faster shovel-crane cycles. There's warranted "Shear-Ball" connection for rock steady swings, minimum maintenance . . . and a two-speed crawler with independent travel and air ease controls. Plus many others.

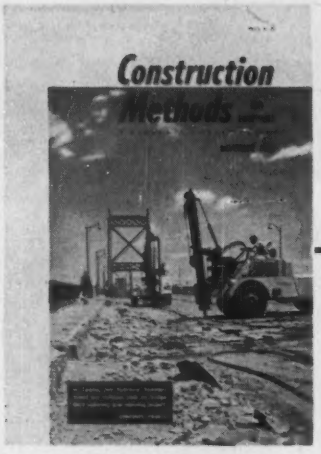
If you are looking for a heavy-duty rig that will boost your output and widen your workability, ask your Lorain distributor about the 85-A.

**THE THEW SHOVEL COMPANY, LORAIN, OHIO**

# LORAIN® ON THE MOVE

**PLANTS:** In Lorain, Elyria and Bucyrus, Ohio . . . **PRODUCTS:** Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity . . . **OUTLETS:** Lorain products sold and serviced by 249 distributor outlets throughout the world.

*Circle 3 on Reader Service Card*




**ON THE COVER**

Two Ottawa Hydra-Hammers fitted with special pick-like punchers work on the deck of Toledo's Anthony Wayne Bridge to cut up 11½-in.-thick asphalt-covered concrete pavement into 6x9-ft blocks that can be removed easily. The contractor, Lathrop Co., is removing and replacing the old pavement on the 4-lane, 3,215-ft-long bridge. Crews must take care to prevent chunks of pavement from falling into the street below and maintain traffic while pouring the new roadway. (*Story appears on p 80.*)

## DEPARTMENTS

Washington News ..... 11
Job Talk ..... 20
Machinery Market Trends ..... 39
Construction Business ..... 40
Picture of the Month ..... 57
Construction News in Pictures .. 61
Construction 'Round the World .. 68
Editorial ..... 79
Sales and Service ..... 131
Construction Equipment News .. 136
New Product Briefs ..... 159
New Publications ..... 162
Advertisers' Literature ..... 167
Maintenance Shop ..... 171
Methods Memo ..... 178
Reader Service Card ..... 179

**NEXT MONTH**

Extendable columns equipped with hand winches raise and lower 57-ft-long forms for four concrete barrel arches. The columns are mounted on skids and move from pour to pour on a wooden rail. The barrel arches are 400 ft long and have a span of 56 ft. Each covers two adjacent aeration tanks that are part of a sewage treatment plant expansion project.

Photo Credits—57 Northwest Air Photos, 68 (top) W. E. Middleton & Son, 91, 95 (right) Bucky McDonnell, 124 U.S. Navy.

NOVEMBER, 1960

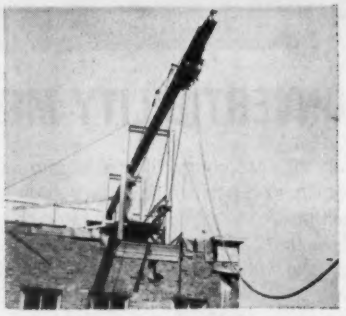
# Pay Dirt in This Issue

## Variety of Machines Battle Swampy Ground.. 83

Earthmovers placing a fill on wet ground can't get enough traction for spreading. So they build the embankment to a 2-ft height, advancing its toe a few feet at a time.

## Blasters Carve Tunnel As Traffic Keeps Moving 91

A tunnel that will carry approach lanes of the George Washington Bridge calls for precision blasting. The contractor cuts and covers in five stages to keep traffic flowing.



## Monorail Reaches Into Interior Court ....120

A Nashville contractor, who has the job of filling in an interior court on a 7-story building, gets his material in via a monorail and hoist running across the roof.

Hydraulic Hammers Perforate Pavement ..... 80
Jacks Lift Double-Warped Floor Slab ..... 87
Forms and Shores Move Without Disassembly .....100
Paving Tricks Save Time .....103
Two Ways to Seat Cofferdams on Rock .....110
Scrapers Rehandle Hard Coral .....117
Skyline Rig Places Radar Tower .....124
Precast Forms Slice Cap Cost .....127

# "GORMAN-RUPP TRASH PUMPS HAVE TO BE GOOD, FOR THIS JOB...AND THEY ARE"

**Michael T. "Mike" Broderick, V. P., Fago Bros. Construction Co.**

"We have stretches of 16 hours a day when our Gorman-Rupp pumps must work satisfactorily to keep water and sewage away from the ditching and concrete pipe installion on this 96" storm-and-sanitary sewer we're installing. We like the performance of the pumps . . . self priming is a big feature and a time saver, and the pumps are easy to get at for routine maintenance. *Gorman-Rupp trash pumps have to be good for this job, and they are.* We've been using them for years."

This is a quotation by Mr. Broderick in connection with his firm's work on the 2.8 million dollar Kensington Expressway, in New York.

Add to Mr. Broderick's remarks, the fact that Gorman-Rupp non-clogging impellers will pass spherical solids up to 1⅛" in a 2" pump; 1½" in a 3" pump; 2" solids in a 4" pump and up to 2½" solids in a 6" pump. And just a turn of the wrist removes the patented end plate for quick access to impeller and wear plate. Write today for complete information.

## THE GORMAN-RUPP COMPANY

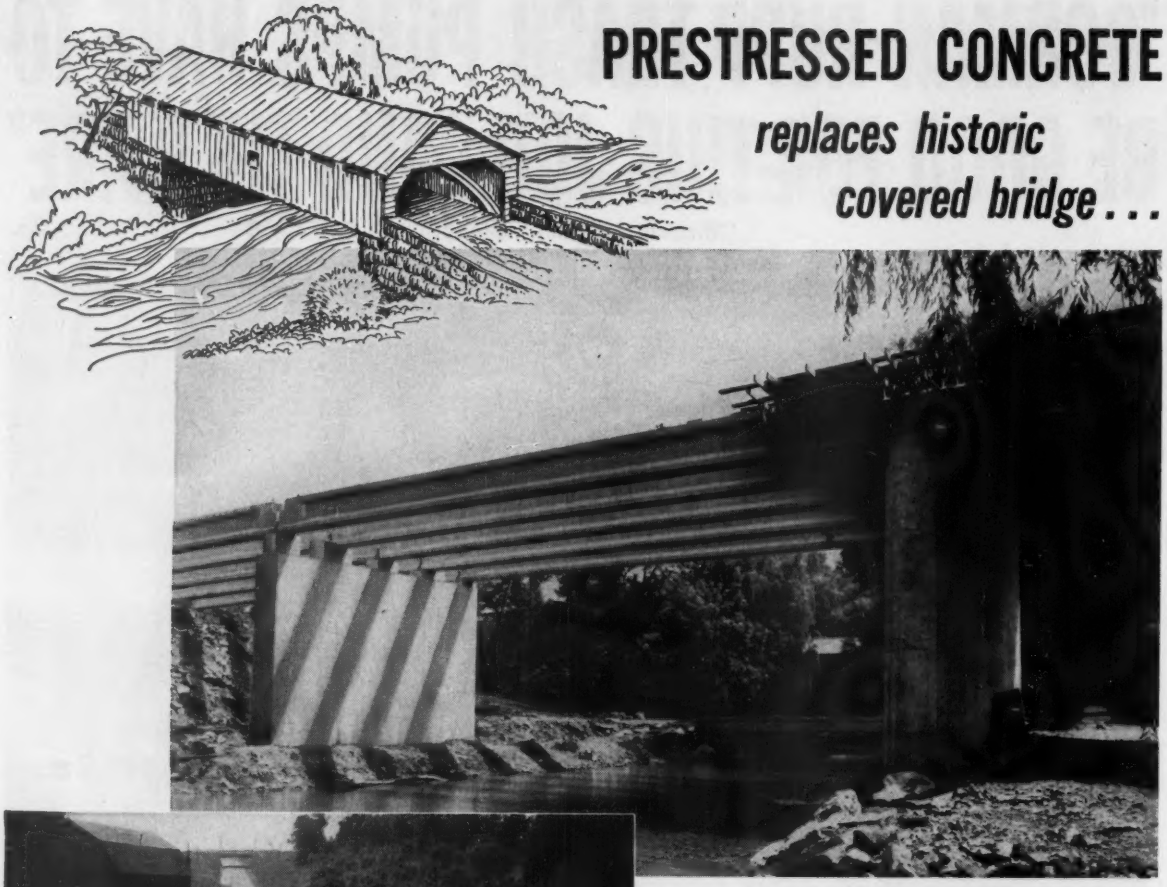
**305 BOWMAN STREET MANSFIELD, OHIO**

**GORMAN-RUPP OF CANADA, LTD., ST. THOMAS, ONTARIO**

*Circle 5 on Reader Service Card*

# PRESTRESSED CONCRETE

## *replaces historic covered bridge . . .*



Just visible among trees in background is the old bridge, built in 1841, which has now been restricted to pedestrians, equestrians and cyclists. Between the old and the new bridges can be seen a temporary span composed of five 40′ x 3′ prestressed concrete box beams, which was used during life of job for movement of construction equipment.

Each of the 15 prestressed I beams is 74′ long and weighs 22 tons. At the far end of bridge workmen build forms for concrete deck. In addition to the use of Lehigh Early Strength Cement in the beams, Lehigh Portland Cement was used for both deck and piers.

*Owner:* Pennsylvania State Highway Department
*Contractor:* Kingston Contracting Company, West Point, Pa.
*Prestressed Beams:* Eastern Prestressed Concrete Corporation, Line Lexington, Pa.
*Ready Mix Concrete for Piers and Deck:* The Sheesley Company, Allentown, Pa.

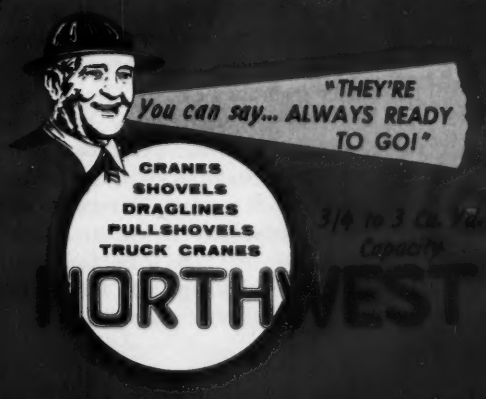
**LEHIGH CEMENTS**

• Once again, prestressed concrete has been selected to help ease a problem of increasing traffic. Here, a neat three-span structure replaces a picturesque, but inadequate, covered bridge south of Allentown, Pa. The reasons for the choice of prestressed concrete—appearance, ease of erection, initial cost, low maintenance—explain its growing popularity the country over.

In the manufacture of the prestressed I beams, Eastern Prestressed Concrete Corp. used Lehigh Early Strength Cement. Consistent use of this type of cement in their prestressing operations helps them attain maximum production efficiency through early removal of units and quick re-use of forms.

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction. Lehigh Portland Cement Company, Allentown, Pa.

# BIG··POWERFUL




## NORTHWESTS Get the Jobs done!

What do you want a Pullshovel to do? What advantages do you want? What results do you want?

Northwest Pullshovels bring you the power and the weight and working ranges to handle digging that other, lighter rigs of the same rating can't handle—at depths other rigs have trouble reaching. Northwests get the job done in easy digging or tough digging.

That's a Model 6 in the picture—a 1¾-yd. Pullshovel. It will give you an 8-ft. bottom at 27 ft. There is plenty of boom to spoil well out of the way. It easily clears the highest truck without banging side boards or spillage. The dipper fills rapidly in the sticky "going" pictured or in rock digging and it is designed to dump quickly at the truck.

The Feather-Touch Clutch Control gives the true "feel" of the load for accurate handling in setting pipe and Uniform Pressure Swing Clutches run all day, cool and dependable, without jerk or grab. Northwest steering easily negotiates the mucky going so often characteristic of sewer work and has been proved in countless miles of all kinds of travel. These features are typical of all Northwest Pullshovels from the ¾-yd. 25-D to the Model 95.

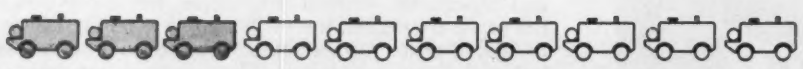
These things combine to get the job done faster and more profitably. They are the things that make it possible for you to say, "That Northwest is always ready to go." They are the features that make the Northwest the finest machine of its kind.

*Details make the machine. It will pay you to dig them out. Ask a Northwest man!*

**NORTHWEST ENGINEERING COMPANY**
**1503 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois**

New Blue Brute drilling team—Worthington Blue Brute 900' rotary compressor with over/under design operates two Blue Brute crawler-mounted 4½" drills.

# Why your next 900′ compressor will



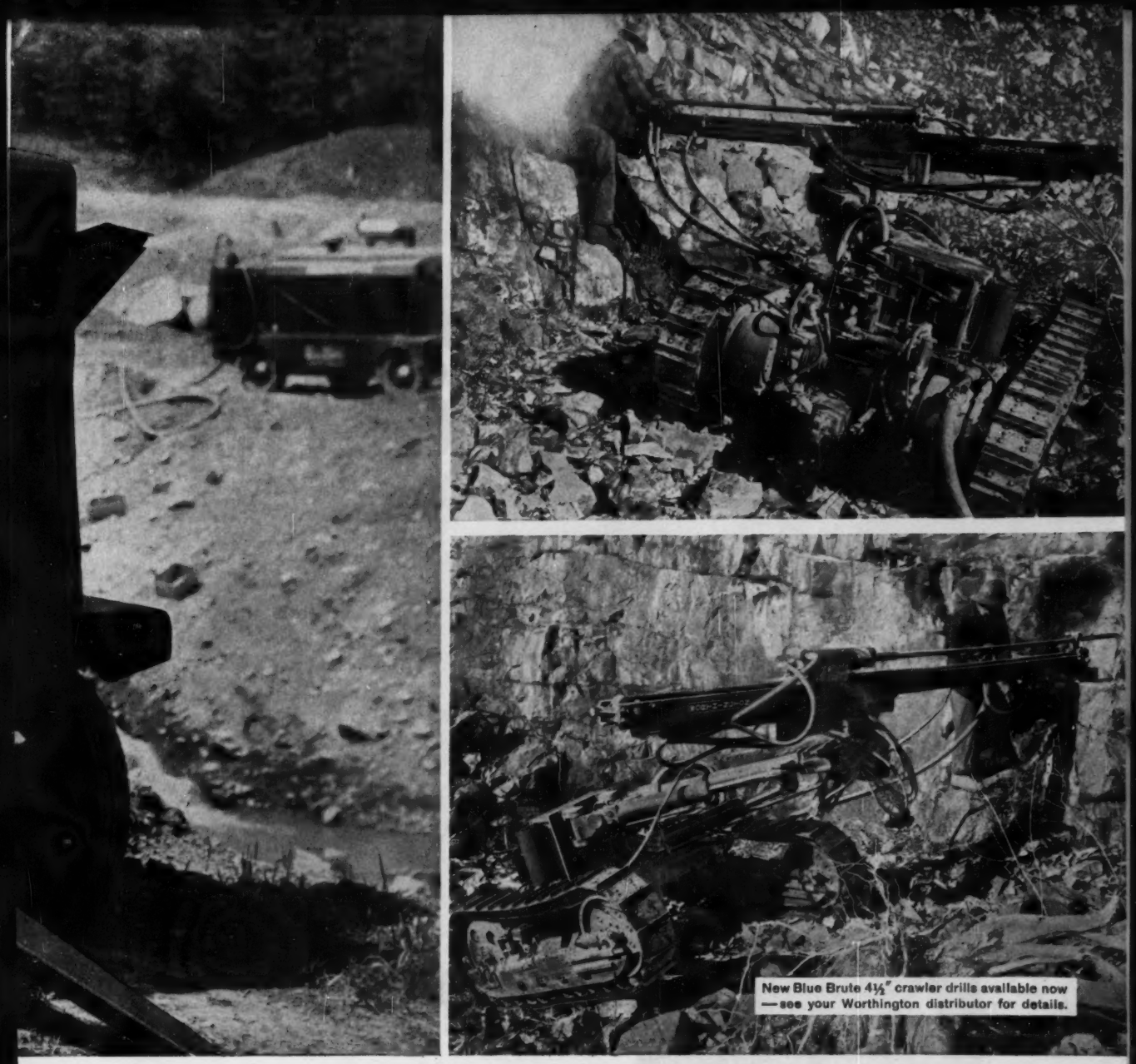
Most manufacturers build their small rotary compressors with end-to-end design. Only 3 out of 10 produced use over/under construction (shown in blue)...

Yet in the 900' size, more over/under units are sold than any other. The story opposite tells why...

If you looked inside every rotary compressor on the market you would find one major difference that separates the men from the boys.

A few manufacturers build their rotaries with over/under design: i.e. the compressor's second stage is directly underneath the first. This results in an improved rotary with many benefits. The cylinders are self-draining (this stops clogging) and easy to get at for repairs. All principal parts can be re-

◀ *Circle 7 on Reader Service Card*




# most likely have OVER/UNDER design

moved for inspection and replaced in a hurry.

The superiority of over/under design is indicated by the fact that in the largest, most expensive size (the 900′ unit) *more over/under rotaries are bought than any other kind.* Yes, it takes over/under design to handle heavy jobs, such as operating *two* Worthington 4½" Blue Brute drills which get maximum drilling footage with least air consumption and less maintenance.

Worthington is one of the few manufacturers that offer over/under design in every compressor in its line. Worthington Blue Brute rotaries made with over/under design are built in 125′, 210′, 315′, 365′, 600′ and 900′ sizes. (A single-stage 85′ rotary is also available.) There's a complete line of Blue Brute drills, too—right through the 4½" size. Ask your nearby Blue Brute distributor for a demonstration. You'll find him in the Yellow Pages under "compressors." Or write Worthington Corporation, Dept. 60-24, Holyoke, Mass. In Canada: Worthington (Canada). Ltd., Brantford, Ontario.

WORTHINGTON

*Circle 9 on Reader Service Card*

# KOHLER ENGINES

**MODEL K161**

**4-cycle**
**Short stroke**
**Air-cooled**

## Serving a wide range of quality equipment

Kohler engines power brand name equipment manufactured for construction, agriculture and industry by many leading companies—some of whom are identified above. They also power Kohler electric plants, known everywhere for reliability.

The Kohler name is an accepted mark of value, giving assurance of superior power performance.

Sold and serviced nation-wide, Kohler engines are rugged, quick-starting in all weather, easy to maintain, conservatively rated. Short stroke design gives maximum usable power, cuts engine friction.

Kohler Co. has manufactured internal combustion engines for 40 years.

**KOHLER OF KOHLER**

**FROM 4 TO 24 H.P.** *Write for illustrated booklet.*

**KOHLER CO.** *Established 1873* **KOHLER, WIS.**

ENAMELED IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL-BRASS FITTINGS • ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

*Circle 10 on Reader Service Card*

# Construction News From Washington

Washington, D.C.
November, 1960

## Missile Base Construction Unsnarled

Right now it appears that the Pentagon's pressure on the Air Force and the Army Engineers has removed most of the snarls that had put bases for intercontinental ballistic missiles way behind schedule.

The shake-up has been quite drastic, but it still leaves the Corps of Engineers, the building trades unions, and the construction contractors with pretty much the same roles they had before Secretary of Defense Gates threatened a drastic shakeup, if necessary, to get the billion dollar construction program back on schedule.

## Here's How the System Now Works:

CORPS OF ENGINEERS: General Welling's new Ballistic Missile Construction Office at Los Angeles is the top authority for all construction contracting and supervision of construction. Welling has his own officers at each base construction site, as the single authority to deal with construction contractors. This arrangement puts the missile base program completely outside the jurisdiction of the regular Corps of Engineers organizaton, which goes down to the district engineer.

AIR FORCE: Design and design changes—a particularly thorny problem—are completely under the Air Force czar, Maj. General Gerrity.

ELIGIBLE CONTRACTORS: A drastic selection system is applied to weed out contractors who want to bid on missile base jobs. For instance, of the 170 firms who wished to bid on the first three base awards to come along, only 25 were declared qualified to enter the competition for the contract award.

The list isn't static, the Engineers say; the number could expand or contract, and the list of those eligible could change as outsiders are qualified and once-qualified bidders are taken off the list.

The Engineers are trying to keep the list secret.

WORK ALLOCATION, LABOR JURISDICTION: There will be no upsetting of applecarts here, either. At a meeting of the labor leaders with Secretary Gates, an understanding was reached: the Secretary would go down the middle on work allocation at missile sites as between the construction trades and the industrial unions.

In return, the labor leaders—without putting it in so many words—gave what amounts to a no-strike pledge, which of course has to be teamed up with a no-lockout understanding from the employers. Contractors have to go along, for all practical purposes.

*continued on next page*

## Highway Funds Available Earlier

Another $718-million of Interstate highway contracting authority has been released ahead of time by Secretary of Commerce Mueller. This is the amount that was originally set aside for release to the states for the quarter beginning in January.

All told, this brings to $2.3-billion the highway money made available to the states—but of course not all states are in a position to sign contracts against their new drawing account. Not all states have their right-of-way and design work ready. And not all states have the necessary matching funds on hand. Bureau of Public Roads officials say that New York, Illinois, Texas, Wisconsin, and North Dakota are among the states that can benefit most quickly.

The new announcement leaves only about $600-million yet to be released of the total available for the current fiscal year.

## Government Construction Spending to Rise

The latest official look at public works and other spending programs for the current year pins down precisely what the insiders have indicated all along:

Federal spending will edge higher than Eisenhower forecast when he sent his budget to Congress in January. Here's a rundown:

- ARMY CIVIL FUNCTIONS—Up slightly from the $920-million forecast last January.
- AID TO SCHOOLS—In federally-impacted areas, up more than $50-million over the $207-million figure of last January.
- COLLEGE HOUSING—Up $20-million over the earlier $168-million predicted.
- HIGHWAYS—Up $145-million, bringing the new total to about $3-billion.
- MILITARY CONSTRUCTION—Down a notch from the $1.35-billion January schedule.
- RECLAMATION—Down about $21-million from the $300-million figures of January.

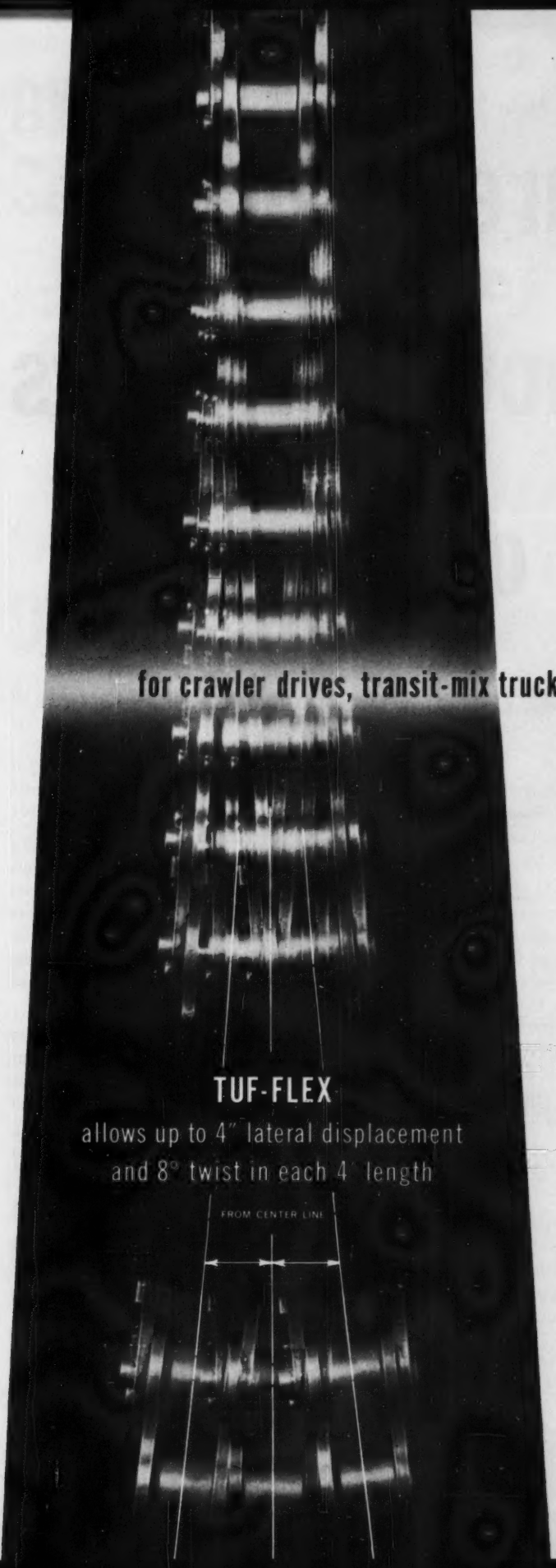
## Huge Snake River Projects Clash

Hearings are underway now before the Federal Power Commission on two huge, conflicting hydro-power projects proposed by rival power systems for the Snake River between Oregon and Idaho (CM&E, Oct., P 13).

Washington Public Power Supply System's proposed 700-ft concrete arch dam at the Nez Perce site (2.5 miles below the confluence of the Salmon and Snake Rivers) would cost an estimated $400-million-plus, have a generating capacity of 3.36-million kw.

Pacific Northwest Power Co.'s proposed High Mountain Sheep Dam (690 ft concrete arch dam half a mile above the Salmon-Snake confluence) would cost $190-million, generate 2-million kw.

The FPC staff, in an initial summary of comparable data on the two projects, estimated High Mountain Sheep's benefit-to-cost ratio at 1.47-to-1; estimated Nez Perce's ratio between 1.22-to-1 and 1.35-to-1, depending on the interest rate available for revenue bonds.




new

# DIAMOND TUF-FLEX™ Roller Chain

## for crawler drives, transit-mix trucks and other heavy-duty equipment..

*gives you* **longer service life!**

- accommodates gross sprocket misalignment and severe chain twist
- absorbs greater shock and peak loads
- provides higher working load capacity
- reduces stiffness after exposure to weather, mud, dust and dirt

***Fits all standard pitch sprockets***

Write today for new *Tuf-Flex* folder. Gives engineering features, construction details, specifications and prices . . .

**DIAMOND CHAIN COMPANY, INC.**
*A Subsidiary of American Steel Foundries*
**Dept. 418 • 402 Kentucky Avenue**
**Indianapolis 7, Indiana**

DIAMOND ROLLER CHAINS ®

*The Trade Mark *Tuf-Flex* is the property of The Diamond Chain Company, Inc.

*Circle 13 on Reader Service Card*

# Why all three models of Cat Tractor-Scrapers in our fleet?

***Gordon Ball, President, Gordon H. Ball, Inc., Danville, California***

"It's simple. We've learned that we get the highest, most economical production with machines that are matched to the job. Each job we do is different—and conditions vary on each job. The most important common factor is the need for high production at lowest cost.

"No one machine can do everything best. Some can handle grades better. Some can haul bigger loads faster. Others can work in tighter quarters. So we want the machines that best fit the jobs. This gets us to Cat Tractor-Scrapers. Each one—DW21, DW20, 619—gives us high production under a broad range of applications. And each does it *economically*. But each can handle certain conditions better than the others. With only one model, we would have to live with conditions that limit the machine's effectiveness on parts of the job to get best over-all production. With all three models, we can use the one that works best on each phase of the project, for highest total production at lowest cost.

"What are these conditions? Take bad grades or soft underfooting. Our versatile DW21s handle these with comparative ease. When we can take advantage of their high speed on long hauls, we use our high production DW20s. And when we have to work in tight quarters where maneuverability is essential, we bring in our smaller 619s. This doesn't mean any of them sit idle when these conditions don't exist. We simply take care of the special conditions with the best suited machines, and put the rest to work on other jobs.

"Take a look at typical assignments. The DW20s and DW21s are working on highway projects. Hauls up to two miles permit efficient use of the high travel speeds of the four-wheel DW20s. Steep grades, particularly around Conway Summit, are best handled by the two-wheel DW21s. The 619s easily handle dirtwork in the deep narrow channels of the San Lorenzo Creek Flood Control Project.

"Of course, a major consideration is their ability to do this month in and month out, with little lost time for maintenance. They must be, and are, ready to work when we need them, and able to stay on the job until the work is done. This combination of high production, ability to handle any job and low maintenance helps us move our dirt fast at the lowest possible cost."

**FOR INFORMATION** about Cat Tractor-Scrapers, see your Caterpillar Dealer.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

**CATERPILLAR**

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**A TRACTOR-SCRAPER FOR EVERY JOB**

# DW21 Series G

High producer on bad grades and in soft going

345 HP (Maximum Output)

22.6 MPH

Optional SynchroTouch Transmission Control—split-second shifting with the efficiency of direct drive

Matching 470B Scraper—
19.5 cu. yd. struck
27 cu. yd. heaped

# DW20 Series G

High producer on long hauls

345 HP (Maximum Output)

35.8 MPH

Optional SynchroTouch Transmission Control

Choice of Scrapers:
456B—19.5 cu. yd. struck
27 cu. yd. heaped
482B—24 cu. yd. struck
34 cu. yd. heaped

# 619 Series B

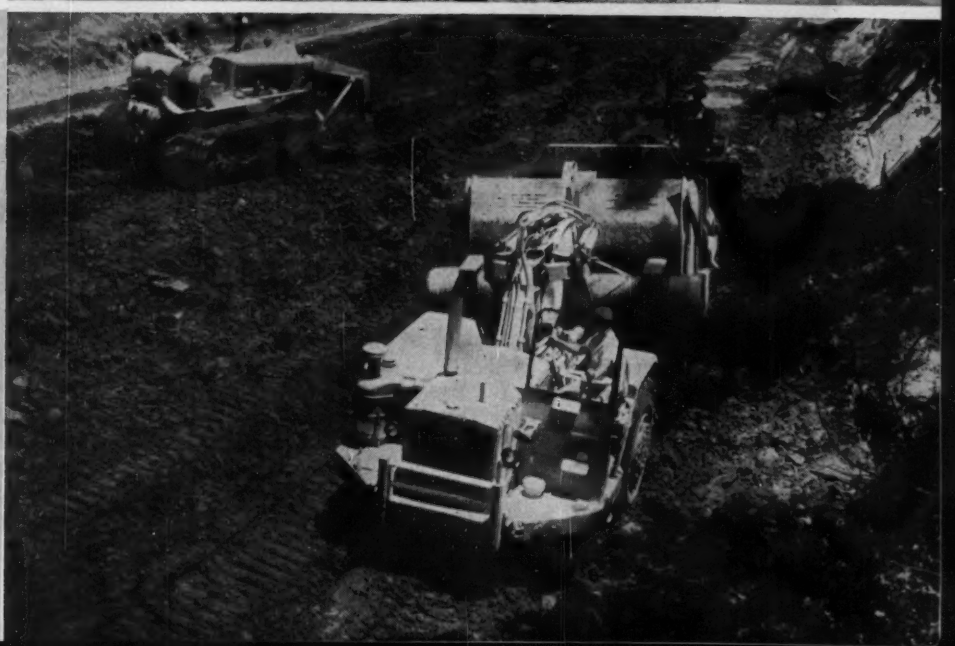
High producer in tight quarters

225 HP (Maximum Output)

30.2 MPH

30-ft. turning diameter

Matching 442B Scraper
14 cu. yd. struck
18 cu. yd. heaped



# LUBE LOGIC

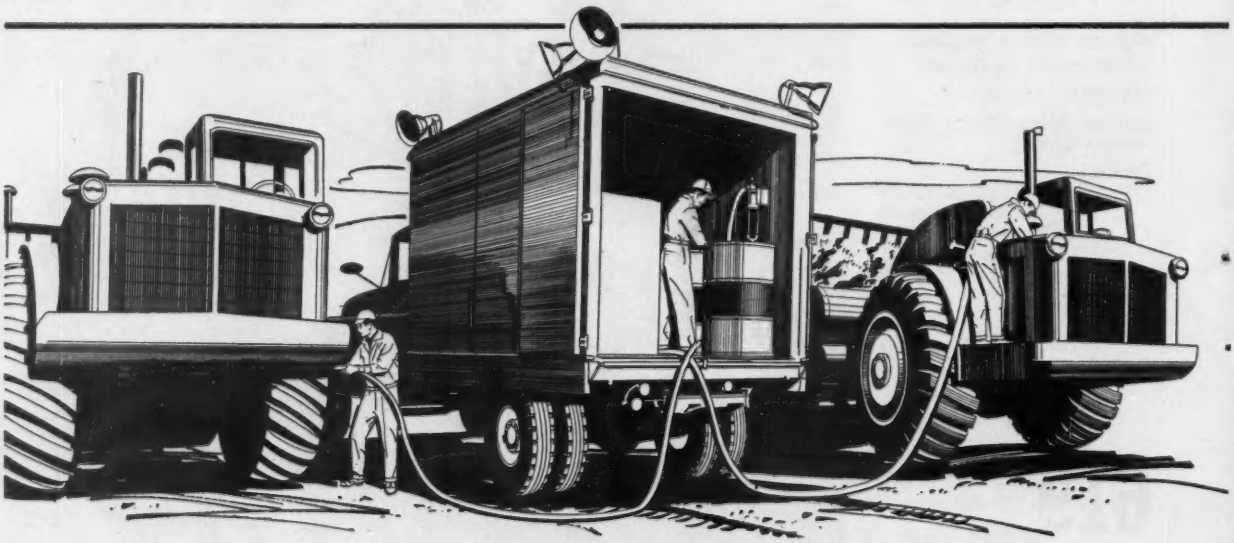
# These four tips

Keeping equipment on the job 92% of the time is an achievement anywhere. But when you can do it while operating in sandstorm country, over 12% grades out of a 300′ deep pit to an additional 200′ to top of spoil area, 100 miles from the nearest parts source – and while you're at it remove a million cubic yards of earth every month, it's a record. Maco Construction Co. is doing it right now, and in doing it they've set up such a fine maintenance routine that we think it'll be a help to you to read about it.

## What Maco is doing

Maco Construction Co. is stripping the over-burden from uranium deposits recently located in the Gas Hills area of central Wyoming for Western Nuclear, Inc. This is the largest strip mining operation ever attempted in the state, and calls for the removal of 25,000,000 cubic yards of over-burden. In this large open pit, the uranium ore lies from 250′ to 300′ below grade.

Maco is using twenty-two scrapers, six push tractors, two bulldozers, two motor patrols and one backhoe on the job. Texaco fuels and lubricants are used exclusively.



## Clean-sweep lube rig handles two machines at once

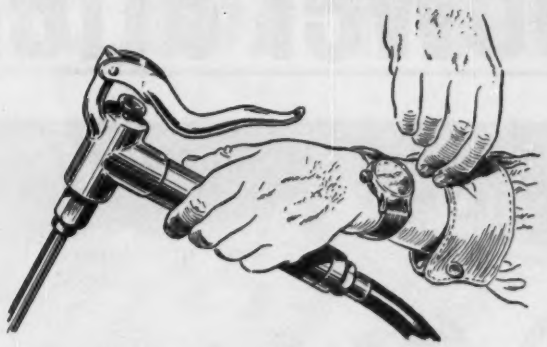
Maco personnel designed and developed a lube rig for this job that is just about as complete as they come – and it has the extra advantage of being able to service two pieces of equipment simultaneously, to make the most of the short period between shifts.

The rig is mounted on a 2 ton van that's kept warm in winter with waste heat from compressor and generator engines. It has two sets of hose reels, one on each side, so that two men can lubricate two different machines at the same time.

Since Maco has a Texaco Simplified Lube Plan, the rig can accommodate sufficient lubricant inventory for the project. Air motors drive the lubricant pumps, and a separate electric air compressor furnishes air. A 25 KW diesel generator set mounted in the van provides power for air compressors, power pumps and the four big floodlights. Maco personnel built the tanks that hold motor oil and hydraulic fluid; transmission and lube grease are pumped direct from original containers.

With this lube rig it's possible for the maintenance crew to lubricate all major equipment in the three hour period between shifts, so no work time is lost.

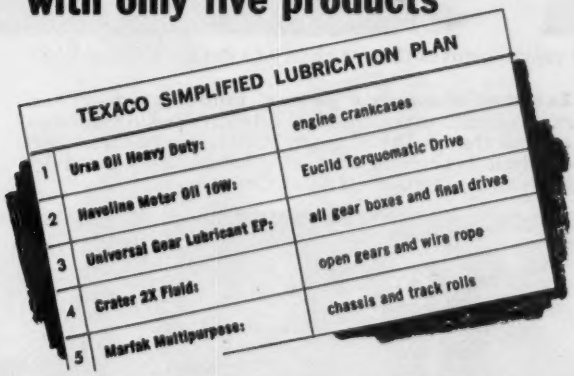
# achieved 92% average availability



## Clockwork lube scheduling boosts availability

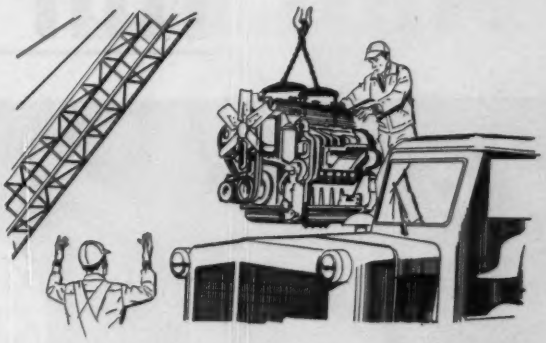
Every machine on Maco's spread is serviced every day, in the period between the close of the day shift, at 4:30, and the beginning of the night shift, at 7:30. The 22 scrapers are lined up in a double row, and the mobile rig passes between them. Every machine is lubricated completely, and air filters are cleaned, at the end of every 10-hour shift. Crankcases are drained every 100 hours. Lube interval on gearboxes and torque converters is 2000 hours.

## Simplified Lubrication Plan protects 33 major units with only five products



| TEXACO SIMPLIFIED LUBRICATION PLAN | | |
|---|---|---|
| 1 | Ursa Oil Heavy Duty: | engine crankcases |
| 2 | Havoline Motor Oil 10W: | Euclid Torquematic Drive |
| 3 | Universal Gear Lubricant EP: | all gear boxes and final drives |
| 4 | Crater 2X Fluid: | open gears and wire rope |
| 5 | Marfak Multipurpose: | chassis and track rolls |

With their Texaco Simplified Lubrication Plan, Maco gets fast, thorough, systematic lubrication for all major equipment with the smallest possible lube inventory. This inventory simplifies and speeds up application routine because it avoids confusion, minimizes downtime due to misapplication of lubricants, and lets Maco put their lube inventory on the mobile rig for complete on-the-spot coverage.



## Replace-don't-repair theory cuts shop time

Although Maco is well equipped to handle emergency repair on the job, they cut shoptime drastically by sticking to an exchange system on major components like engines, transmissions and torque converters. Duplicate spares of these units are kept on hand. Then the defective unit is simply removed intact from the machine and replaced with a new or rebuilt one. All major repairs on engines, transmissions and torque converters are done at the Rawlins shops. Parts are flown in via Maco's own plane from headquarters in Rawlins, Wyoming.

Minimum downtime on equipment is the principal advantage of the exchange system, but not the only one. For instance, engine repairs can all be made in a fully equipped shop, without having to rush or make temporary repairs; and this system also ensures full availability of the field maintenance crew for their routine work.

## Texaco Lubrication Engineers

There are 2,300 Texaco Distributing Plants in the U. S. ready at any time to help you develop a Texaco Simplified Lubrication Plan for your next job. Since every Texaco Plan is designed to lubricate specific equipment on a specific job, you'll get the best results by consulting a Texaco Lubrication Engineer. Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

TEXACO

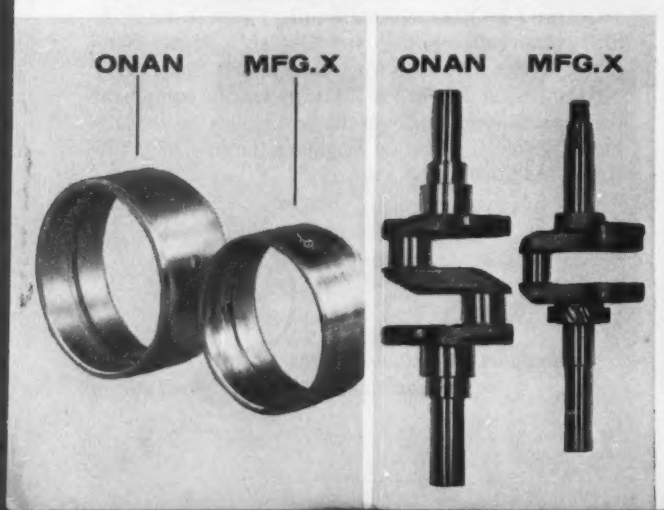
*Throughout the United States*

*Canada • Latin America • West Africa*

# Onan Electric
# full power after

Typical Onan torture test—tougher by far than normal usage—proves Onan's ability to deliver on any job.

**Generous design assures longer life**—Husky Onan has double the bearing area of many equivalent rated engines . . . plus larger, stronger crankshaft to minimize breakdown and to give you longer, trouble-free service between overhauls.




**Exacting standards govern manufacture**—Years of specialized experience and extensive testing facilities control the quality of Onan Power Plants. Over 1000 different types and sizes of plants are produced by this same, careful method at Onan.

# Plant still delivers 12,197 hour test run!

*Run equivalent of 487,888 miles... killed and started... tortured, tested, retested... Onan Test Plant #1068 still delivered full-rated power*

A grueling endurance test that lasted one year, nine months and 12 days could not stop Onan Test Plant #1068. Development engineers used this production-built unit as a testing laboratory. And after it was all over, it still generated the full rated power promised on the nameplate. Proof that Onan's exacting standards and production testing give you a power plant with long, dependable service built in.

Over 1,700 other endurance tests have been run by Onan development engineers. Here's where every design feature and part had to prove itself before it could become a part of the Onan you buy. In addition, every type and size Onan Plant is tested under all operating conditions which affect its performance.

Hours of running in and testing under load are given every Onan before it is shipped. An independent testing laboratory retests Onan-tested Plants and certifies Onan testing methods—double assurance that every Onan will deliver its full nameplate rating. Only then does an Onan qualify for its Performance Certified Guarantee.

You buy *proven* performance when you buy an Onan Plant. See your Onan representative. You'll find his name in the telephone classified section in every major city, or write direct.

**ONLY ONAN GIVES YOU THIS CERTIFICATION**

PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.
D. W. ONAN & SONS INC.
Minneapolis 14, Minnesota
Onan

Onan®

**World's Leading Builder of Electric Power Plants**

**D. W. ONAN & SONS INC., 2696 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINN.**

*Circle 19 on Reader Service Card*

. . . and for

# NEARBY SERVICE

**on B&D tools**

Black & Decker maintains 50 factory service branches plus authorized repair stations to give your B&D tools the attention every mechanical product needs periodically. Keep your B&D tools in top condition, on the job all the time.

Only factory parts and factory-approved methods are used. Fast service and reasonable cost, always.

**SWIFTY SERVICE says be sure to ask about:**

**FREE TOOL INSPECTION** no cost, no obligation.

**STANDARD B&D GUARANTEE** after completion of all recommended repair work.

You'll find the location of the nearest B&D repair facility in the Yellow Pages under "Tools-Electric," or write for address to: THE BLACK & DECKER MFG. Co., Dept. 2211-S, Towson 4, Md.

50 YEAR

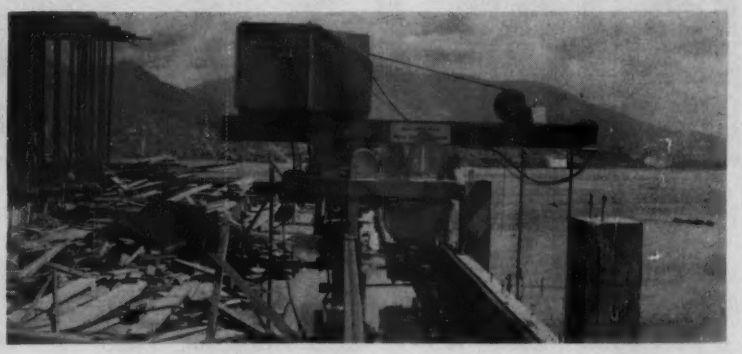
Black & Decker

**Quality Electric Tools**

*Circle 20 on Reader Service Card*



# Job Talk...

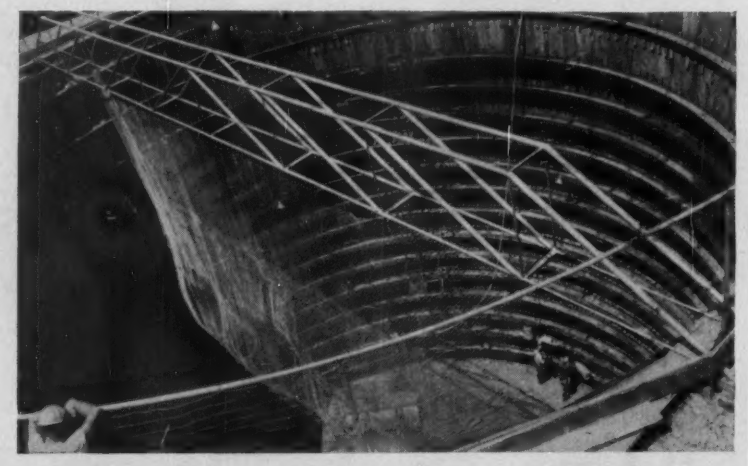


## Remote Controlled Crane Lifts Precast Units

A search to find an economical means of placing precast concrete panels and columns for the face of the 19-story United Kingdom building in Vancouver, B.C., ended with the Canadian contractor selecting a remote controlled crane that rides on tracks around the top of the building.

The Tiger crane lifts loads weighing up to 2 tons and takes them at speeds up to 40 ft per min to any point around the building. It can move its load in any of three planes. In addition to raising or lowering it, the crane can move the load in or out from the face of the building by means of a retractable boom. And the tracks, which will serve as mounting for window washing equipment when the building is completed, give the crane sideways mobility.

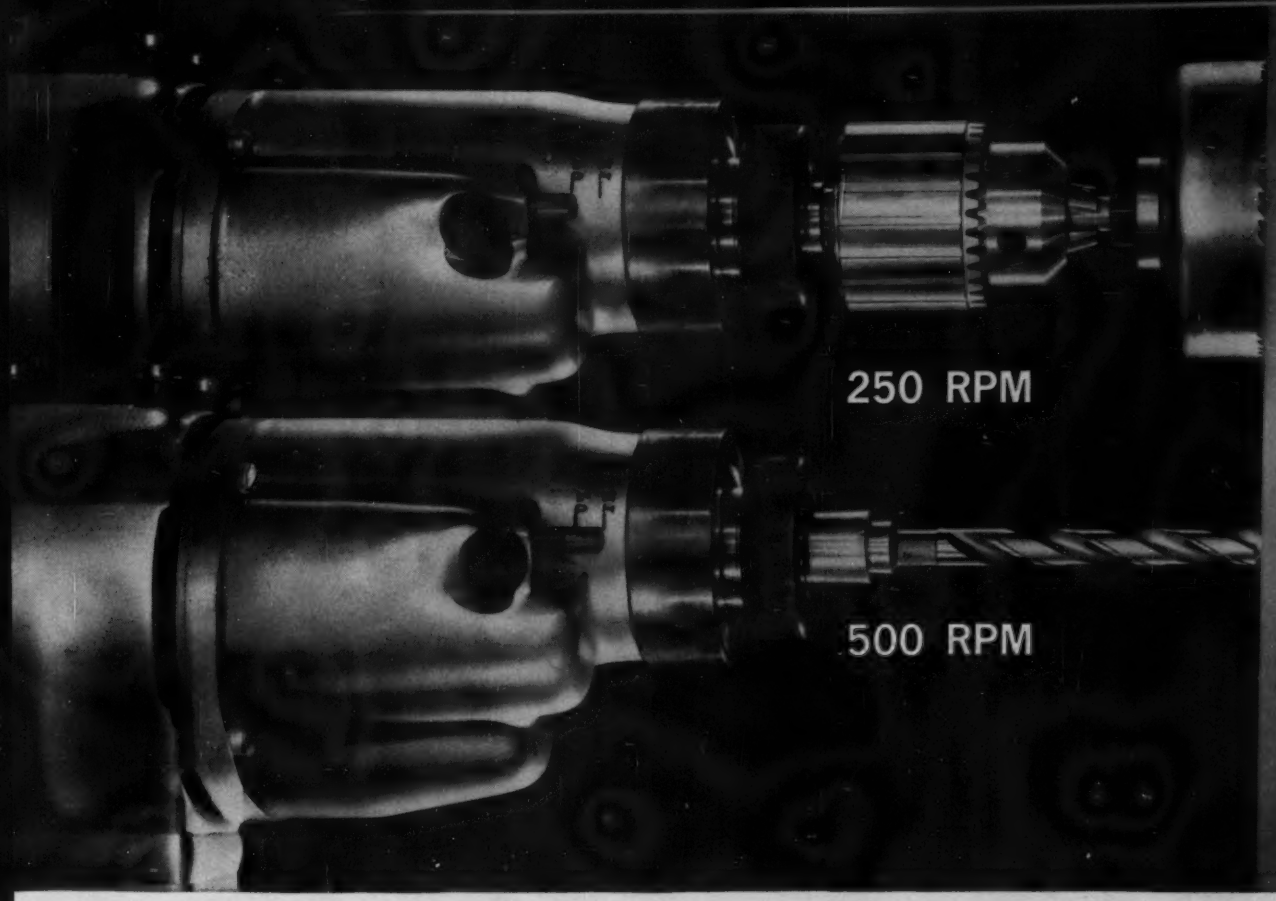
Built by Canadian Car Pacific Ltd. for the contractor, B.C. Concrete, the crane eliminates the need for workmen to hold steadying lines. It also makes stockpiling around the foot of the building unnecessary. The crane can unload trucks delivering the precast units directly without any rehandling. The operator stations himself with the push-button controls so as to see every movement of the load, so no signalman is ordinarily needed.



## Vertical Safety Net Divides Missile Silo

Army Engineers require a vertical barrier for workmen at the bottom of missile silos to retreat behind when overhead work is in progress on the other side. Sidetracking conventional timber and steel beam barricades, Western Contracting Co. of Sioux City, Iowa, filled the bill on their $23-million job at Lincoln, Neb., with a pipe truss and chain link fencing. Cables lashed to ring beams of the shaft anchor the fence.

*continued on page 28*



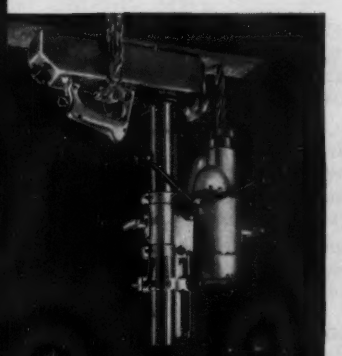

# NEW 2-Speed drill has the versatility to do more jobs more efficiently!

Hole sawing . . . masonry work . . . core drilling . . . reaming . . . *any* production drilling job is a cinch with B&D's new precision-balanced Two-Speed Drill. Celebrated B&D engineering even allows you to use this ruggedly built tool as a *separate* power unit. Switch the clutch control and it automatically changes from 500 RPM for high-speed work to 250 RPM for extra-power drilling. Reverses easily too!

You'll appreciate the way B&D reserve power flows out over the heavy-duty roller bearings to give you the *precise* speed for effortless production work . . . the way work speeds through your shop, dramatically reducing your labor and down-time costs. See how B&D's Two-Speed Drill can do your jobs faster, with *less* fatigue . . . with *more* profit! Sold by leading distributors everywhere. *For sales or service look in the Yellow Pages under* TOOLS ELECTRIC

**Black & Decker**®

CUTS MAN-HOURS TO MINUTES



**NEW Two-Speed Black & Decker Magnetic Drill Press**

equipped with the new 1¼" Two-Speed unit operates manually or by exclusive remote control. Work against the ceiling, right side up, or sideways. Gets into tight spots easily, rapidly. Also ¾" (single speed) model.

THE BLACK & DECKER MFG. CO., Dept. 2211
Towson 4, Md. (In Canada: Brockville, Ont.)

☐ Please arrange for a demonstration of.....

☐ Please send me more information on.....

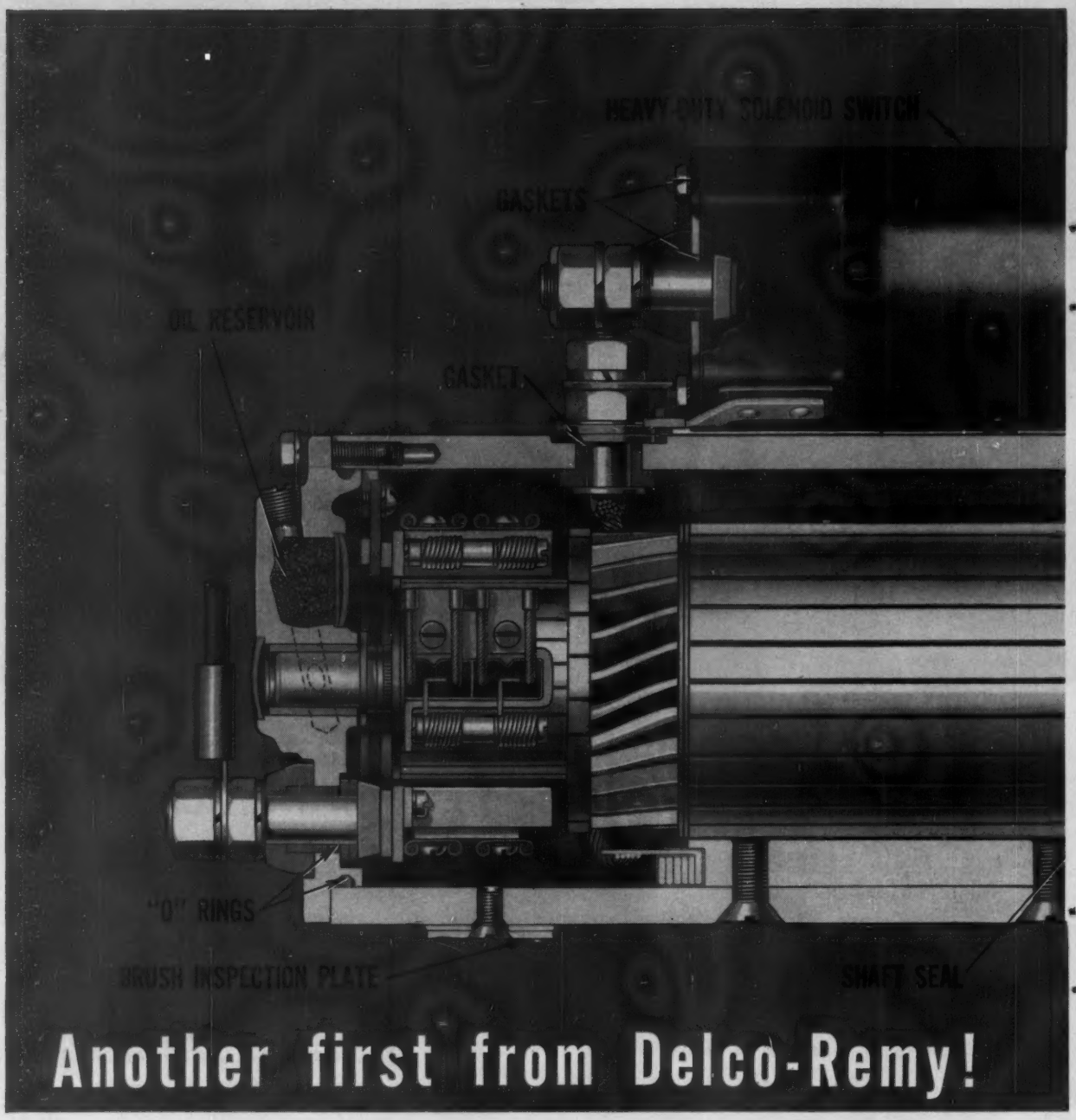
Name..... Title.....

Company.....

Address.....

City..... Zone.... State.....

☐ IMPACT WRENCHES ☐ HAMMERS ☐ SANDERS ☐ SAWS




## Another first from Delco-Remy!

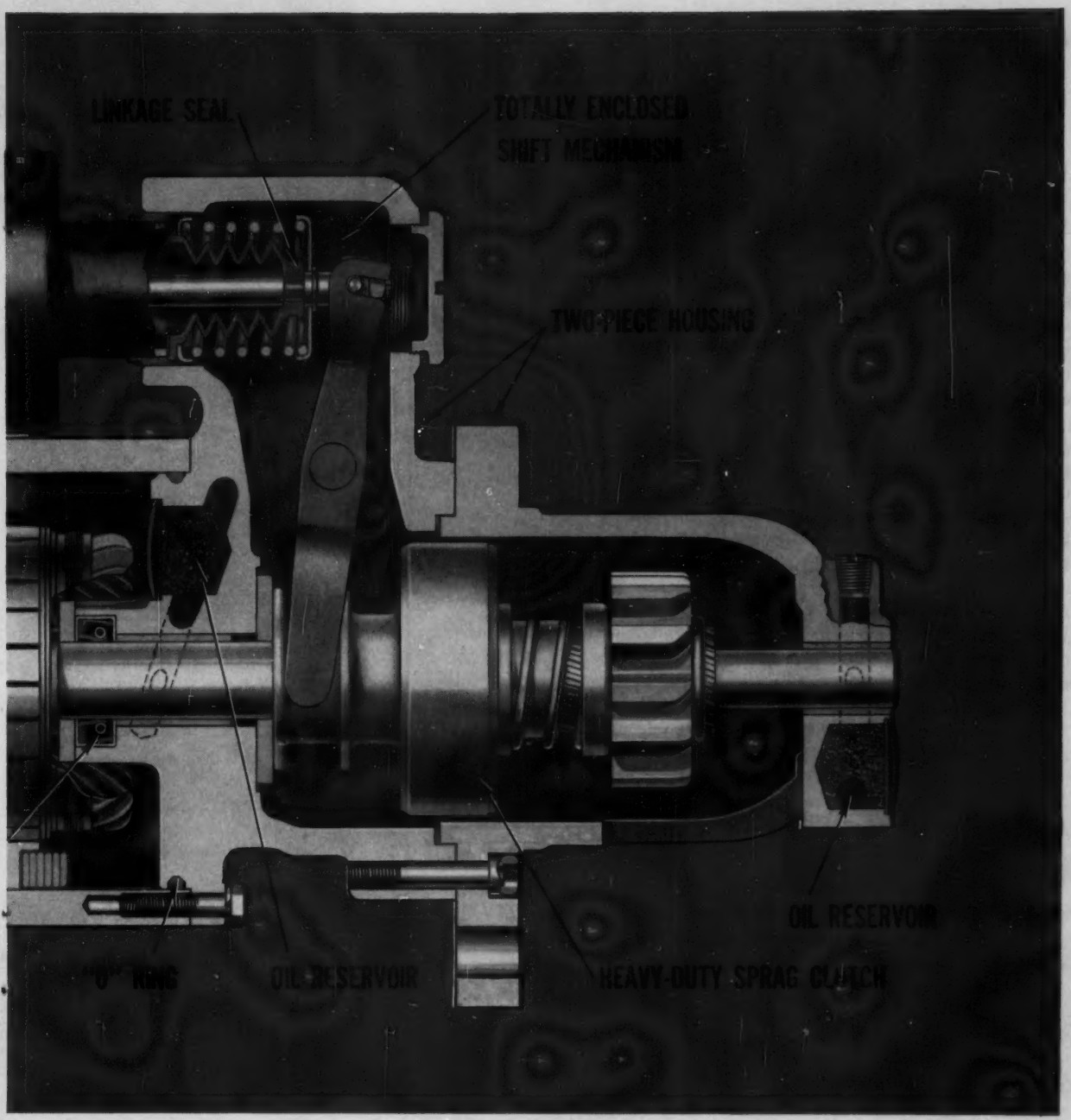
# NEW DELCO-REMY HIGH-OUTPUT MOTOR

*Completely new series* of high-output cranking motors! These 12-volt motors have the torque and speed to do the same job as 24-volt motors of equal size *and on the same battery power.* No need for series-parallel switches and their complicated wiring on engines up to 900 cubic inches. These solenoid-operated, over-running clutch type heavy-duty cranking motors come with special two-piece drive housings that permit 24 different motor mounting positions. Their new 50% longer brushes, together with sealing rings (optional) and large oil reservoirs (optional), assure extra-long operating time between overhauls.

TOTALLY ENCLOSED DRIVE SHIFTING MECHANISM is protected against dirt, water, slush and ice. This enclosure, plus the shaft seal and linkage seal, also blocks transmission oil leakage into the motor and solenoid.

TWO-PIECE DRIVE HOUSING DESIGN permits 24 different solenoid positions which allows greater standardization—cuts fleet inventories. Nose housings are available in S.A.E. #2 and #3 mountings.

HEAVY-DUTY SOLENOID AND SWITCH provide positive pinion engagement and safely handle maximum starting current. Special seals keep out foreign material and allow increased contact life.




# ELIMINATES SERIES-PARALLEL SWITCHES

SPRAG CLUTCH DRIVE operates with non-chamfered ring gear. Pinion indexes on spiral spline, positively engaging ring gear before power is switched on. Engagement of the pinion and ring gear is maintained during intermittent or sporadic engine firing.

HEAVY BRUSH INSPECTION PLATES resist damage from use and handling—are sealed to prevent leakage.

Engine manufacturers are invited to write directly to Delco-Remy for complete information and engineering assistance on the specific application of these new motors.

Fleet owners will find this motor available for new trucks through their truck dealers.

FROM THE HIGHWAY TO THE STARS

## Delco-Remy electrical systems

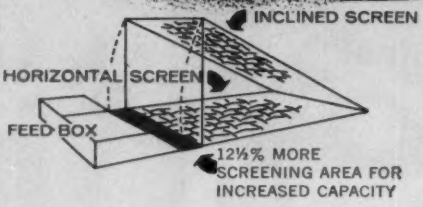
GM GENERAL MOTORS

DELCO-REMY • DIVISION OF GENERAL MOTORS • ANDERSON, IND.

*Circle 23 on Reader Service Card*

# What you should know about screens

***Should your screens be horizontal?*** Yes. With a screen in horizontal position, you get 12½% greater screening area and up to 30% greater screening capacity than with an inclined screen of the same size. Gradation is not only much faster, but more accurate, because in horizonal position, the full area of each screen cloth opening is utilized. This greater hourly production and more accurate grading of strict specification aggregate has been proved by 25 years' profitable service of Cedarapids Horizontal Vibrating Screens.




***Should your screen have a spreader feed box?*** Yes. When correctly designed, a feed spread box absorbs the shock of dumped rock and distributes material evenly over the full width of the screen. Spreading material facilitates quick removal of fines in the first few feet of screen area, and reduces wear. A properly engineered feed spread box is standard equipment on Cedarapids Horizontal Vibrating Screens.

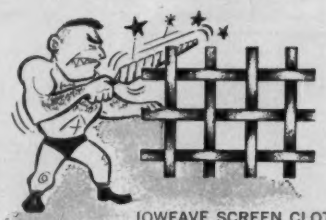
SHARP, SNAPPY ACTION ASSURES FAST SEPARATION

***Should screen action be "cushioned"?*** No. The very nature of the job of separating different sizes of stone demands sharp, vigorous action of the screen decks. The required "snap" cannot be obtained if the action is air-cushioned. The lively, snappy action over the full length of Cedarapids Horizontal Screens, with no vibration transmitted to the frame, eliminates dead spots and assures faster, more effective separation without carryover.

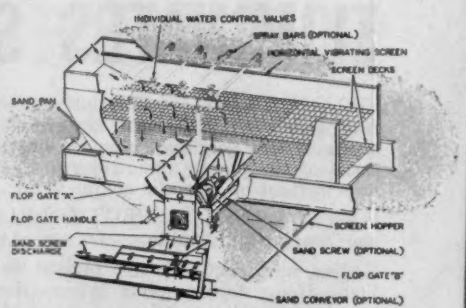
***Should screen box be stress relieved?*** Yes, to insure longer life and lower maintenance. Cedarapids screen boxes and support frames for wire cloth are heat treated in a special furnace to relieve any stress that might be set up in welding.

STRESS RELIEVED FOR LONG LIFE

***What about screening very abrasive material?*** Let's face it! Wear and maintenance will be relatively high. But in a Canadian plant, processing rock so abrasive that it eats through ¾" mild steel plate in 35 minutes, the producer chose Cedarapids Horizontal Screens with Ioweave screen cloth, after thorough testing of many other makes. Ioweave screen cloth, made by Cedarapids from a special analysis, oil tempered wire that withstands abrasive wear, proved most economical for this tough job.


IOWEAVE SCREEN CLOTH RESISTS ABRASION AND FATIGUE

***When should you use a "special" screen?*** Always! Your particular job is always "special" because there's no other like it. You need screens with the correct deck arrangements, proper cloth openings, perhaps with washing attachments . . . screens for aglime, rip rap, scalping, or portable screening units . . . whatever is exactly right to handle the special requirements of your job. In the complete Cedarapids line, there are screens, attachments, and accessories in the type and size you need.



SCREENS AND ATTACHMENTS TO MEET YOUR SPECIFICATIONS

***How can you select the best screens for your job?*** Easy! First, ask your Cedarapids Dealer to help you work out your specification requirements. Then simply send them to Cedarapids for an engineered recommendation for the Cedarapids Horizontal Vibrating Screens that will meet your specifications with lowest cost per ton.

*Circle 25 on Reader Service Card*

at lowest cost per ton...with

# CEDARAPIDS HORIZONTAL VIBRATING SCREENS

Cedarapids' 25-year-proved design of Horizontal Vibrating Screens brings you the profit-benefits that insure high capacities of specification-perfect products at lowest cost per ton. The horizontal position of the screen, plus its snappy live action, permits more material of the correct size to pass through each deck. Crushers are not bogged down by screen carryover. Your entire plant is production-balanced for maximum hourly tonnages.

The extra-high capacity and extremely close gradation of Cedarapids Screens cut down the circulating load, thus reducing wear on crusher jaws, roll shells and conveyors. Lower over-all plant maintenance cuts your cost per ton still further.

Always specify Cedarapids Horizontal Vibrating Screens for your stationary installations. And to be sure of *most* efficient, *most* profitable operations, call on Cedarapids to engineer your entire plant.

Write for information today!

**IOWA MANUFACTURING COMPANY • Cedar Rapids, Iowa**

S-1060N

Three Cedarapids 4' x 12' double deck Horizontal Vibrating Screens grade aggregate into specified sizes after it is broken by a Cedarapids Double Impeller Impact Breaker. This stationary installation is operating in Pennsylvania.

*More proof that...*

## AMSCO HELPS YOU HANDLE MORE TONS PER DOLLAR

Chuck Weinke, shop superintendent (left) and R. J. Bakken, welder, with Amsco tooth which has just been repointed. Teeth are retipped with repointer bars welded on with Amsco Nicro Mang and hard faced with Amsco #20 electrodes. This combination produces stronger welds, less cracking and longer wear.

*Where equipment works mainly in rock... subject to severe abrasion and shock... Here's the way AMSCO users talk...*

# "BEST BUCKET AND BACKHOE EVER PUT OUT"

That's operator language from experienced users of Amsco equipment at Ashbach Construction Co., St. Paul, Minnesota. Chuck Weinke, Shop Superintendent... Ray Reichow, foreman, and Elmer Ahlschlager, shovel operator... all agree that Amsco dippers, backhoe buckets *and dipper teeth* are the best they've ever used.

Ashbach does highway, bridge and dam construction throughout the U. S. Much of its work is in rock, so the firm is specially equipped to handle jobs involving severe abrasion and shock. And that's where Amsco shines!

Chuck Weinke, shop superintendent sums it up this way: "The reason we use Amsco products is the long life of the bucket and easier application in welding the teeth. There is so little maintenance in comparison to competitive makes."

Let us give *you* the service life story on Amsco Manganese Steel Dippers, Backhoe Buckets and Dipper Teeth. Contact your Amsco representative, or write us direct for technical bulletins.

*Trade Mark Registered

# AMSCO

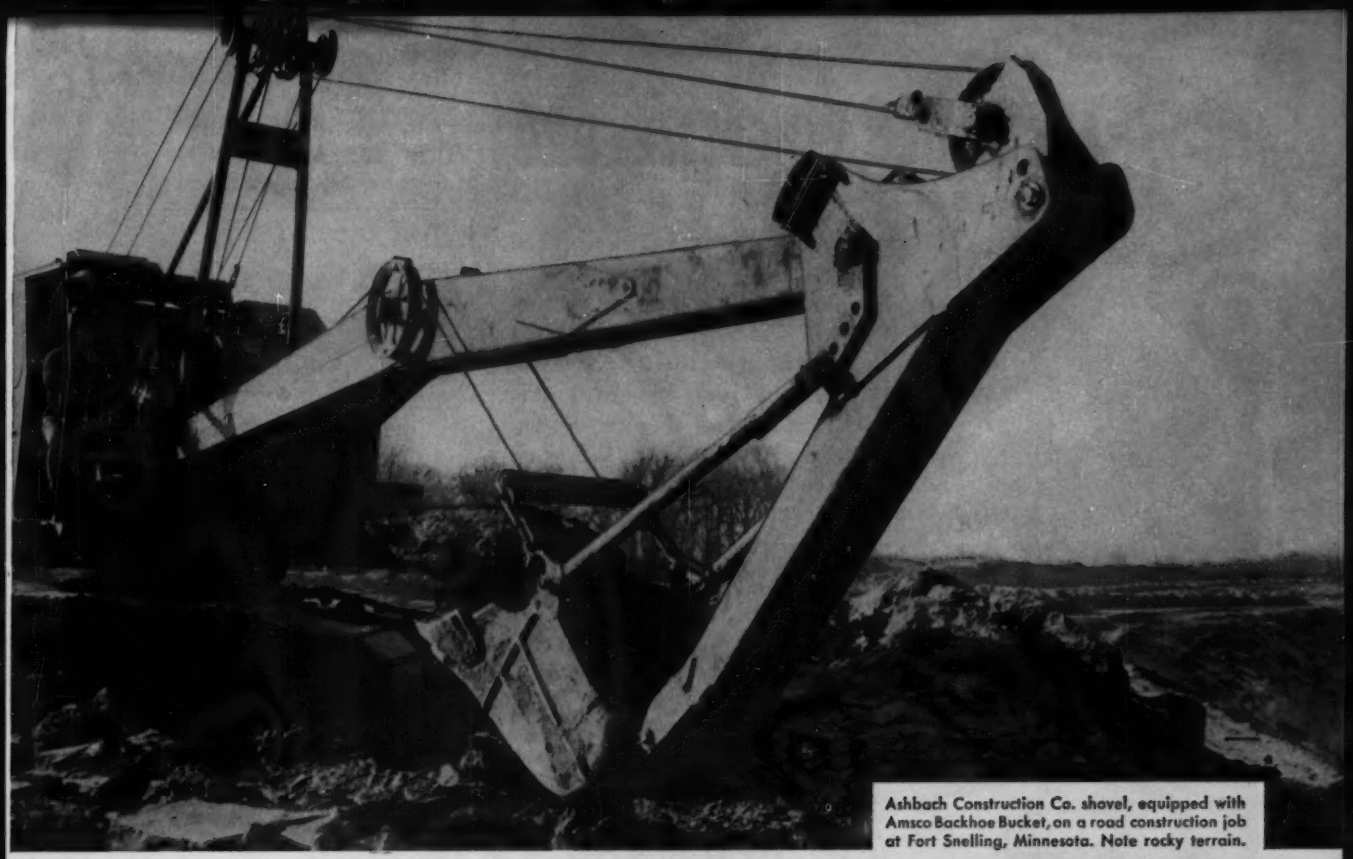
**American Manganese Steel Division • Chicago Heights, Ill.**

Other plants in: Denver • Los Angeles • New Castle, Delaware • Oakland, California • St. Louis

**Welding products distributed by Canadian Liquid Air Co., Ltd.**

AMERICAN Brake Shoe COMPANY

*Circle 27 on Reader Service Card*



Ashbach Construction Co. shovel, equipped with Amsco Backhoe Bucket, on a road construction job at Fort Snelling, Minnesota. Note rocky terrain.

Russell J. Masters, left, and Elmer Ahlschlager, shovel operator, checking the Amsco teeth on an Amsco Dipper.

# NOW—AIR TOOLS WHEN NEEDED

Worthington's Guaranteed Availability Plan keeps a full complement of tools on the job even if some are in the shop for checkup or repair. All you do is: 1) bring your hand-held Blue Brute air tool to your Worthington distributor. 2) While it's in his shop he will lend you another tool.

See your nearest Worthington distributor for complete details about the Guaranteed Availability Plan. Worthington Corporation, Holyoke, Massachusetts.

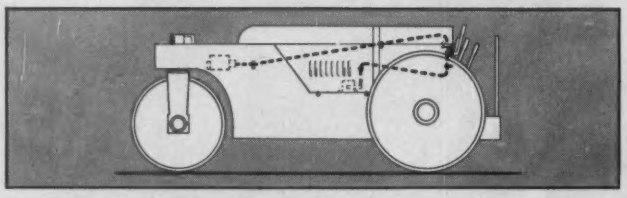
60-16

WORTHINGTON

*Circle 28 on Reader Service Card*

# PUSH-PULL CONTROLS

## give lifetime remote control on construction equipment



• Whether on a tandem roller like the one above or on *any* piece of construction equipment requiring remote control, TRU-LAY PUSH-PULL CONTROLS will give maintenance-free service. They're factory-lubricated for life, sealed against dirt and moisture, and have but one moving part. Your equipment will be more dependable when equipped with PUSH-PULL CONTROLS for operation of air and hydraulic valves, clutches, transmissions, brakes, power take-offs and similar uses. ***WRITE FOR DETAILS... Ask for Bulletin DH-183.***

ACCO **PUSH-PULL CONTROLS**

**Automotive and Aircraft Division**
**American Chain & Cable Company, Inc.**
601-F Stephenson Bldg., Detroit 2 • 6800-F East Acco St., Los Angeles 22
929-F Connecticut Ave., Bridgeport 2, Conn.

*Circle 201 on Reader Service Card*


**JOB TALK . . .**

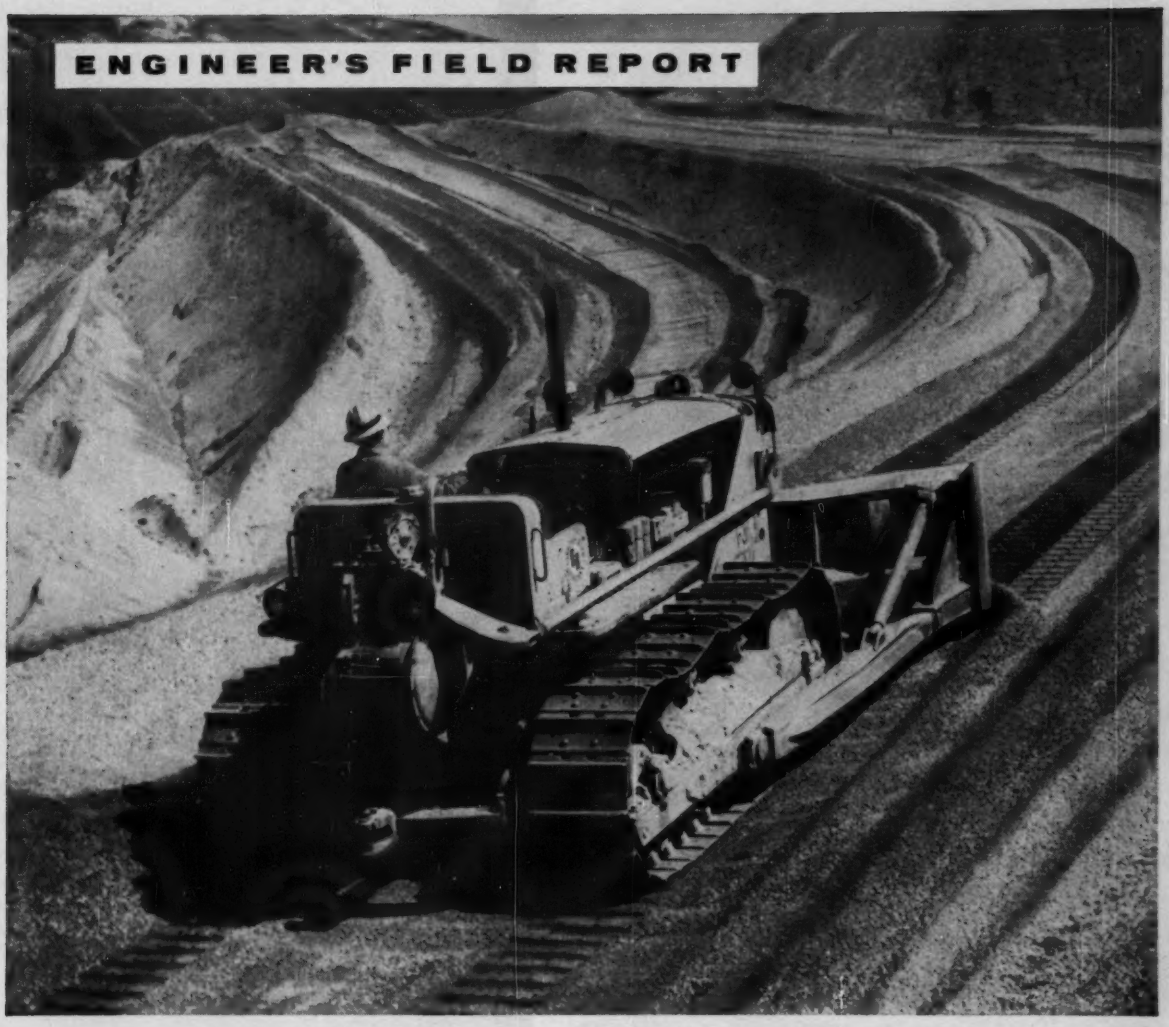
*continued form page 22*

### *Adding Fuel to the Fire*

Disposal of freshly grubbed-out scrub brush and trees can be a troublesome job when the wood is green and the roots are caked with dirt. American Construction Co. of Hartford, Conn., dealt with such a problem like master arsonists in clearing land for the mountain-top site of Bethlehem Steel Co.'s new research center at Bethlehem, Pa.

They made the green timber as readily flammable as firewood by stacking it on top of old rubber tires and dousing the works with No. 2 fuel oil. When ignited, the rubber kept the fire smouldering; the blanket of trees confined and minimized the rubber smell and smoke. Typical piles measured 25 ft high and 50 ft across. About 1,800 tires took care of the entire 47 acres of timber.

The contractor also worked out a method of splashing the fuel oil on the stacks without exposing a workman to the hazards of spraying fuel on a live fire. They fitted a 55-gal fuel oil drum with a spigot and fashioned a sling to hold the drum on the hoist line of a crane. They positioned the drum in the sling so that when it was picked up, it would tilt enough to pour oil out the spigot. As the drum emptied, workmen adjusted the sling between applications to keep it below the center of gravity of the drum. The crane merely swung the drum over the pile as needed, then set it back on the ground out of the way. No workmen had to get close to the flames.




# No lost time—No replacement parts with RPM Tractor Roller Lubricant!

**Tractor equipment** of Gibbons & Reed Construction Co., Salt Lake City, operates in extreme heat, cold, dust and moisture. Yet, despite severe working conditions, track rollers and bearings have given remarkable service using RPM Tractor Roller Lubricant.

**"We've used 'RPM' for over 10 years,"** reports Master Mechanic Harold Higgins. "... it has done a fine job, and we've definitely saved on replacement parts. This lubricant seals out dust and moisture to keep bushings in good shape. We use RPM Tractor Roller Lubricant on over 60 pieces of heavy construction equipment."

**Gibbons & Reed** is one of Utah's top general contractors with construction jobs throughout Western states. Their maintenance policies are the result of over 25 years field experience. As Harold Higgins says: "You can't meet schedules when equipment is down ... that's why we rely on 'RPM' to help keep 'em rolling!"

**RPM Tractor Roller Lubricant** resist wear because it flows evenly to all bearing surfaces, lubricates and retards rust formation. Its special compounds create a tough, wear-resistant film that seals out moisture and dirt.

**Why not try RPM Tractor Roller Lubricant? Chances are it can help reduce down time, lengthen equipment life for you. Just call your local representative or write any company listed below:**

RPM

**STANDARD OIL COMPANY OF CALIFORNIA,** San Francisco 20 • **STANDARD OIL COMPANY OF TEXAS,** El Paso
**THE CALIFORNIA OIL COMPANY,** Perth Amboy, New Jersey • **THE CALIFORNIA COMPANY,** Denver, Colorado

TRADEMARK "RPM" AND CHEVRON DESIGN REG. U.S. PAT. OFF.

*Circle 29 on Reader Service Card*

# Better service accessibility alone makes the "Euc" C-6 your best tractor buy

In the Euclid C-6 crawler you get the advantages of job proved components and years-ahead engineering that keeps down-time and operating cost to the absolute minimum. You get unitized assembly of major components and service accessibility that is unsurpassed by any crawler . . . replacement labor costs are well below those for comparable tractors. For example, complete removal and replacement of a C-6 radiator takes less than one third of the time required for the same work on a competitive machine.

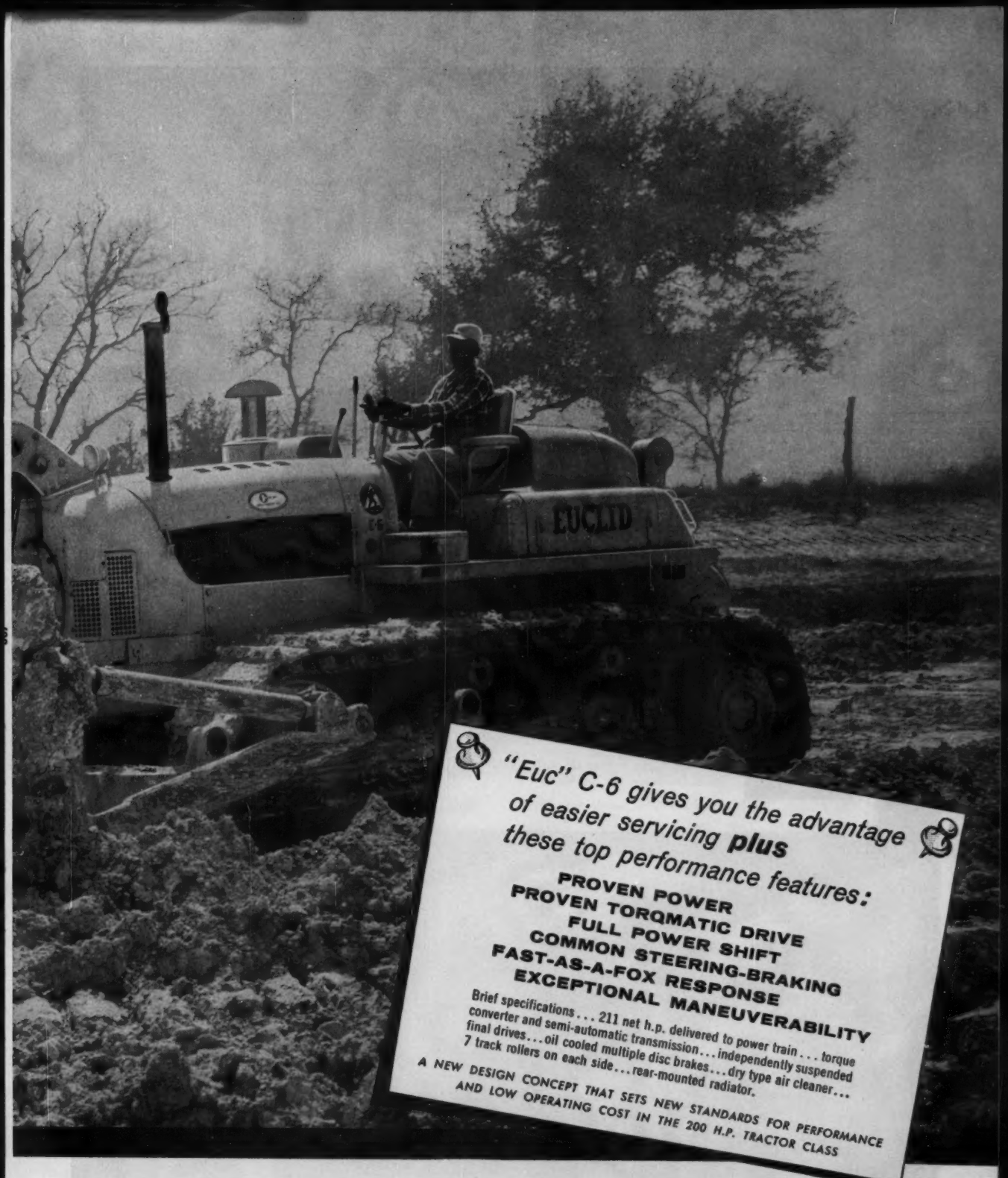
With easy accessibility for servicing and maintenance, the C-6 gives more work-time on the job . . . steps up production . . . helps beat the profit squeeze by cutting operating costs to a new low.

**EUCLID Division of General Motors**
**Cleveland 17, Ohio**

*Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland*

*Full-power shift . . . this Euclid C-6 crawler responds like nothing you've ever touched!*

**Get all the facts and figures on the C-6 . . . you'll find low operating cost plus proven reliable performance make it your best tractor investment.**




*"Euc" C-6 gives you the advantage of easier servicing* ***plus*** *these top performance features:*

**PROVEN POWER**
**PROVEN TORQMATIC DRIVE**
**FULL POWER SHIFT**
**COMMON STEERING-BRAKING**
**FAST-AS-A-FOX RESPONSE**
**EXCEPTIONAL MANEUVERABILITY**

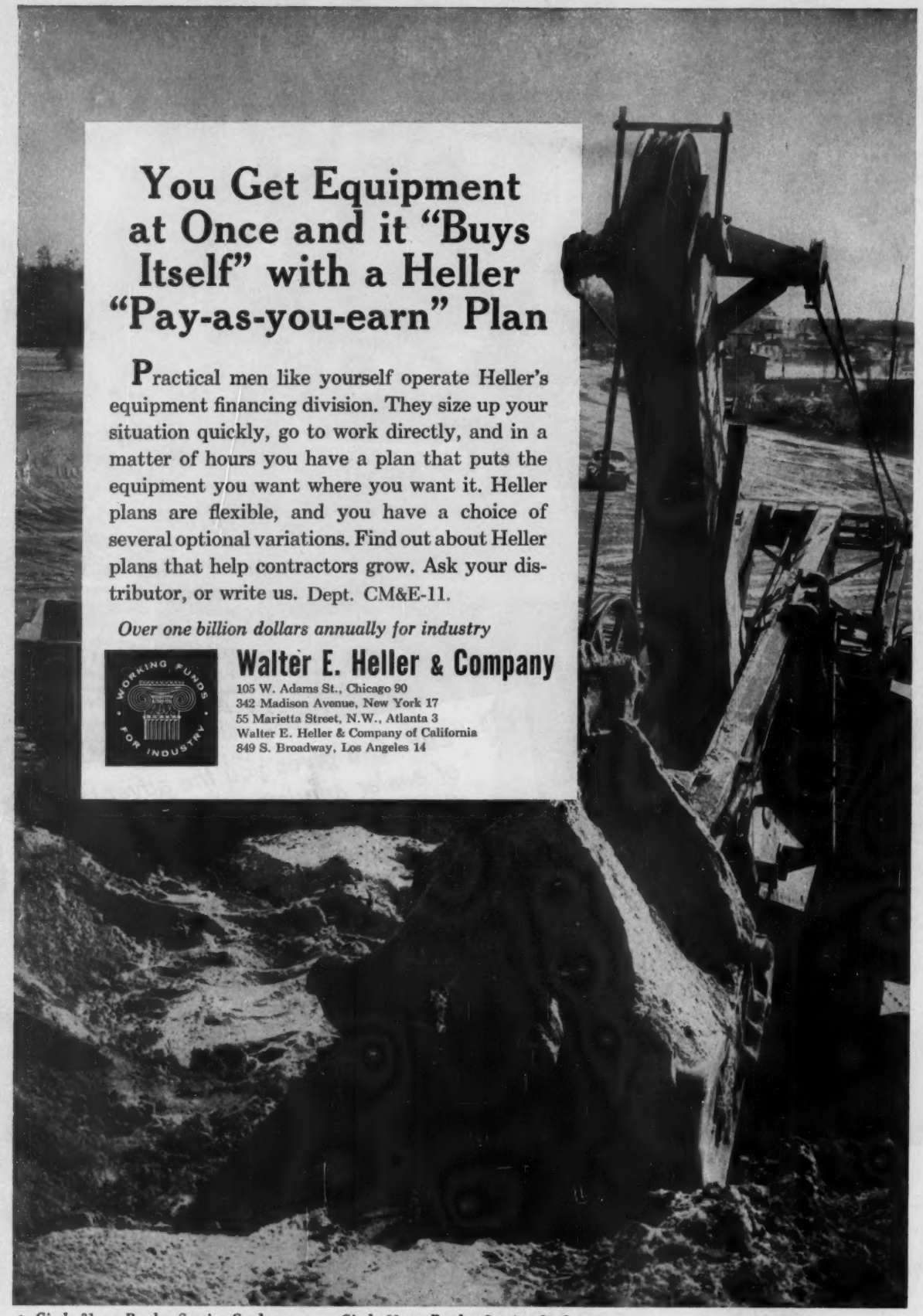
Brief specifications . . . 211 net h.p. delivered to power train . . . torque converter and semi-automatic transmission . . . independently suspended final drives . . . oil cooled multiple disc brakes . . . dry type air cleaner . . . 7 track rollers on each side . . . rear-mounted radiator.

A NEW DESIGN CONCEPT THAT SETS NEW STANDARDS FOR PERFORMANCE AND LOW OPERATING COST IN THE 200 H.P. TRACTOR CLASS

GM GENERAL MOTORS EUCLID

# EUCLID EQUIPMENT

*FOR MOVING EARTH, ROCK, COAL AND ORE*



# You Get Equipment at Once and it "Buys Itself" with a Heller "Pay-as-you-earn" Plan

Practical men like yourself operate Heller's equipment financing division. They size up your situation quickly, go to work directly, and in a matter of hours you have a plan that puts the equipment you want where you want it. Heller plans are flexible, and you have a choice of several optional variations. Find out about Heller plans that help contractors grow. Ask your distributor, or write us. Dept. CM&E-11.

*Over one billion dollars annually for industry*

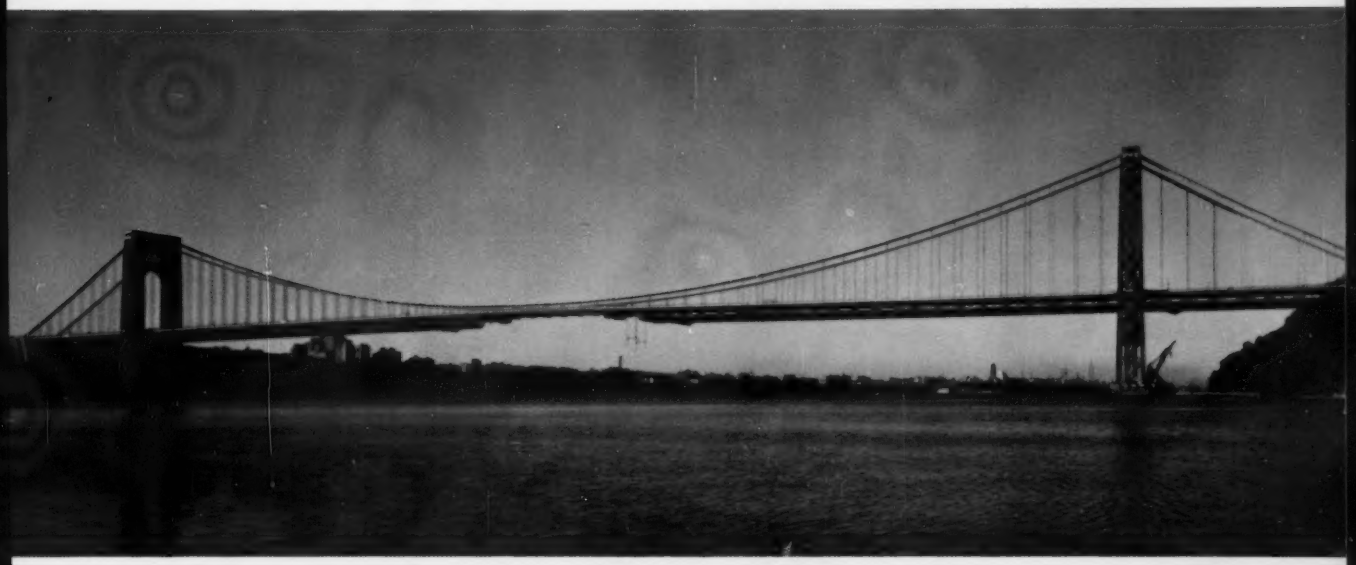
WORKING FUNDS FOR INDUSTRY

**Walter E. Heller & Company**

105 W. Adams St., Chicago 90
342 Madison Avenue, New York 17
55 Marietta Street, N.W., Atlanta 3
Walter E. Heller & Company of California
849 S. Broadway, Los Angeles 14

◀ *Circle 31 on Reader Service Card* *Circle 32 on Reader Service Card*

# On the job with Bethlehem Steel



**DOUBLE-DECK FOR GEORGE WASHINGTON BRIDGE.** The 14,137-ton steelwork for the new lower-level roadway of the George Washington Bridge, fabricated and erected by Bethlehem, was completed in mid-1960. By building upward from flotation barges, traffic on the upper-level roadways was uninterrupted throughout the entire erection period. The Port of New York Authority, owner and operator, plans to open the lower deck to traffic in 1962.

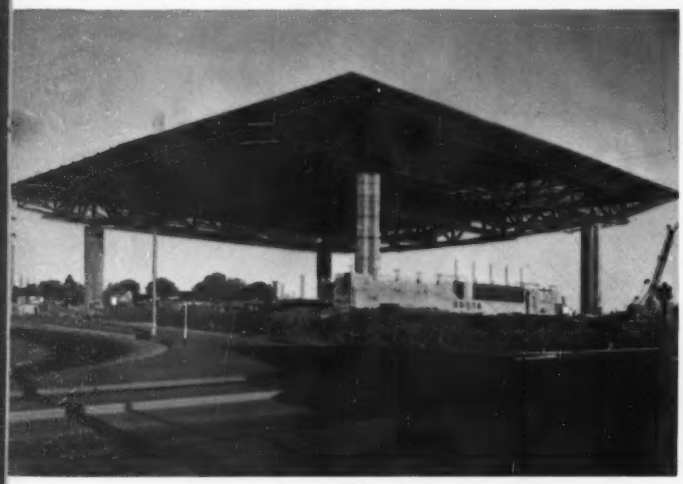
**STEEL STRAND SUPPORTS CIRCULAR ROOF.** This structure will help promote San Antonio, Texas, as a convention city. It's the Villita Assembly Building, owned by the Public Service Board of San Antonio. Its saucer-shaped roof is supported by 200 Bethlehem strand assemblies, consisting of prestretched strands with swaged fittings, and turnbuckles. Prestretching of the strand limited the residual constructional stretch, and also raised the modulus of elasticity.

General Contractor: G. W. Mitchell
Architects: O'Neil, Ford and Associates; Nicanor Salas, project architect
Structural Engineer: W. E. Simpson Company
Steel Fabricator: Alamo Iron Works

BETHLEHEM STEEL

**NEW BUILDING ON CAPITOL HILL.** Bethlehem Wire Rope raises 15-ton steel truss, 36 ft long, one of 128 trusses required in erecting the steelwork for the House of Representatives Additional House Office Building in the nation's capital. Bethlehem is fabricating and erecting 23,000 tons of steel for this 9-story giant, which will be the largest of the buildings occupied by the legislative branch of government.

General Contractor: McCloskey and Company



**ROOF WITHOUT A BUILDING.** The roof is in place, resting smartly on four 70-ft-high concrete columns. This method of construction permitted completion of the walls and interior work during winter months. It's the Memorial Coliseum, constructed by the Portland Exposition Recreation Commission for the City of Portland, Oregon. The roof structure, containing 1,250 tons of Bethlehem structural steel and some 35,000 Bethlehem high-strength bolts, was completed two weeks ahead of schedule.

Architects: Skidmore, Owings & Merrill
Structural Engineers: Moffatt, Nichol & Taylor
General Contractor: Hoffman Construction Co.
Structural Steel Fabricator: Poole, McGonigle, and Dick

**STEEL PILING FOR SACRAMENTO RIVER CHANNEL.** Bethlehem sheet piling awaits installation in walls of a barge canal and navigational lock being built near Sacramento, Calif., under supervision of U. S. Army Corps of Engineers. This is the first project in the West using sheet piling to construct a deep water channel.

# BETHLEHEM STEEL

BETHLEHEM STEEL

**GOAT ISLAND BRIDGE ABOVE NIAGARA FALLS.** Built across the roaring waters of the Niagara River is the American Rapids Bridge, part of the New York State Power Authority's park system along the American side of the river. The 450-ft main span is the longest of any bridge of its type in the country. This job required 2,200 tons of steel, fabricated and erected by Bethlehem.

Designers and Engineers: Praeger-Kavanagh

**STEEL REINFORCES ATLAS LAUNCHING PAD.** This complex of Bethlehem reinforcing bars is imbedded in a concrete launching pad at an Atlas missile base near Reardan, Washington. Unusually heavy concentration of steel bars is required to withstand terrific impact of an Atlas launching.

General Contractor: MacDonald-Patti-Scott-Leavell

**NEW BY-PASS IN EASTERN PENNSYLVANIA.** Pennsylvania Department of Highways recently began the construction of the Scranton By-pass. Here you see Bethlehem hollow drill steel boring blast holes for rock excavation. Other Bethlehem products being used are reinforcing steel, fasteners, wire rope, structural steel, and guard rail.

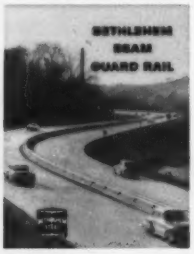
Contractor: Central Pennsylvania Quarry Stripping and Construction Co.

**STEELWORK ERECTED IN LESS THAN A WEEK.** This web-like steel skeleton is the framework for the Greek Orthodox Church, Oakland, Calif. Containing 115 tons of Bethlehem structural shapes, joined by Bethlehem high-strength bolts, it was erected in only 5½ working days. In addition to speeding the work, bolting greatly reduced the noise in this residential area.

Architects and Engineers: Reid, Rockwell, Banwell & Tarics
General Contractors: Williams and Burrows, Inc.

## This literature is yours for the asking

**CATALOG 433.** Dimensions, properties, and specifications for steel sheet piling used in cellular and straight-wall structures.

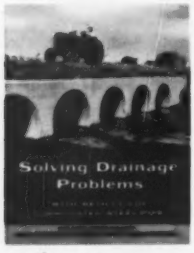



**BOOKLET 514.** Technical data on an improved beam-type guard rail. Has helpful detail drawings.

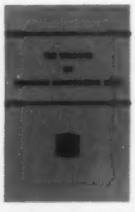
**CATALOG S-58.** Information and tables on structural shapes for architects, engineers, and designers.

**BOOKLET 563.** Uses of high-strength bolts in connecting structural steel members. Includes latest revisions of specifications.

**BOOKLET 549.** Picture story of the fabrication and erection of 53,000 tons of steelwork for The Chase Manhattan Bank.




**BOOKLET 425-B.** The fabrication, design, and installation of steel pipe made from corrugated steel sheets.



**BOOKLET 527-A.** Contains joint details and procedures for welding reinforcing bars. Includes tables and drawings.

**BOOKLET 345-A.** Describes carbon and ultra-alloy steels used in rock drilling. Includes solid and hollow drill steel.

**FOLDER 599-A.** Describes corrugated steel plate used as flooring in new and existing bridges and overpasses.

**CATALOG 493.** Covers every wire rope application used in construction. Also includes section on wire rope fittings.

PUBLICATIONS DEPARTMENT
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Please forward the following literature:

| | | | | |
|---|---|---|---|---|
| 433 | 514 | S-58 | 563 | 549 |
| 425-B | 527-A | 345-A | 599-A | 493 |

Name_____

Street Address_____

City_____ Zone_____

State_____

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

**BETHLEHEM STEEL**

# If it can be moved... there's a MANITOWOC to lift it

Fraction-of-an-inch control is provided by this Model 2900 60 ton capacity Truck Crane.

Why have Manitowocs gained a world-wide reputation as the "Cadillacs of construction cranes"? Because contractors everywhere know that on any lift crane job — steel erection, concrete pouring, bridge construction — the work will go faster and easier with a Manitowoc. They know that Manitowoc engineers have been specialists in crane design for over 30 years. They know that quality Manitowoc components will give them years of reliable lift crane service with the least maintenance and time loss.

You get a simple, direct power train that eliminates wasted energy and provides a reserve lift capacity when you need it most. There's outstanding stability from a solid foundation for high, heavy lifts. Smooth performing disc clutches, fast-acting brakes, and 3-stage torque converters help to provide precise, positive control. And you get profitable all-job use because every Manitowoc is easily convertible to clamshell and dragline attachments . . . several to shovel and trench hoe.

Get more information *today* on the most complete line in Manitowoc's history. Mail the coupon now!

TRENCH HOES
1¼ to 3 YDS.

SHOVELS
1¼ to 8 YDS.

Manitowoc

CRANES
25 to 125 TONS

DRAGLINES
1¼ to 7 YDS.

Unloading steel trusses at the site of Chicago's new Metropolitan Fair and Exposition Center is a 125 ton capacity Model 4000 crane, one of over 100 Manitowocs owned by American Bridge Division of U. S. Steel.

**MANITOWOC ENGINEERING CORP.** Dept. CM
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN

*Please send details on the following Manitowoc cranes:*

CRAWLER-MOUNTED
- ☐ 25 ton
- ☐ 35 ton
- ☐ 50 ton
- ☐ 60 ton
- ☐ 65 ton
- ☐ 100 ton
- ☐ 125 ton and up

TRUCK CRANES
- ☐ 45 ton
- ☐ 60 ton

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

*Circle 37 on Reader Service Card*

C. A. Owens, Owner and Manager
Industrial & Marine Service Co.,
Houston, Texas

# Clevite 77

## Keeps natural gas flowing...NATURALLY!

C. A. Owens, one of the Southwest's leading engine rebuilders who services several of the large oil companies, is shown with one of the engines at the Vienna Field, Texas, pumping station owned by Christie, Mitchell & Mitchell. Mr. Owens has this to say:

"Any owner of a high-speed engine that is operating under continuous and heavy loads must have assurance that down-time will be cut to a minimum. An engine that is down isn't making money, whether it be in a pumping station such as this, or on any type job. You've got to use an engine bearing that can take it. We depend upon CLEVITE 77 to do the job—and it does."

CLEVITE 77 (the bearing preferred by O.E.M.) with patented cast copper lead tri-metal construction provides greater load carrying capacity and longer life.

CLEVITE ALUMINUM BEARINGS: A full line of Steel Backed and Solid Aluminum bearings (identical to original equipment) is available for ALL special earthmoving equipment. A complete range of undersizes gives you up to four regrinds, extending crankshaft life.

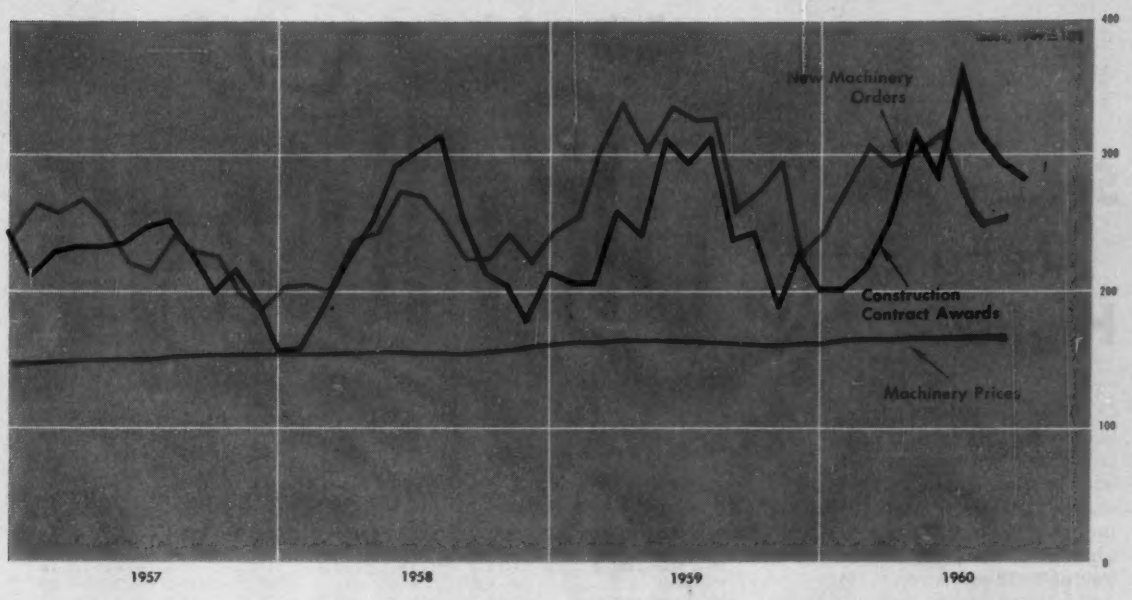
Complete coverage, availability and fast service from your NAPA Jobber make it easy to use the best from the world's leading original equipment manufacturer—CLEVITE.

## MONMOUTH *Engine Bearings*

**CLEVITE SERVICE:** Cleveland Graphite Bronze • *Division of Clevite Corporation* • Cleveland 3, Ohio

*Circle 38 on Reader Service Card*

# Trends in the Machinery Market . . .




## Price Index

| | SEPT. 1960 | MONTH AGO | YEAR AGO | % CHANGE 1959-1960 |
|---|---|---|---|---|
| All Types of Equipment | 176.7 | 176.7* | 172.6 | + 2.4 |
| **Cranes; Draglines, Shovels** | 173.6 | 173.6* | 170.5 | + 1.8 |
| Shovel, ½ cu yd | 167.9 | 167.9 | 165.0 | + 1.8 |
| Shovel, ¾ cu yd | 175.4 | 175.4 | 173.9 | + 0.9 |
| Shovel, 1-1½ cu yd | 189.3 | 188.3* | 184.3 | + 2.7 |
| Shovel, 2-2½ cu yd | 170.3 | 170.3 | 164.5 | + 3.5 |
| Shovel, 3-3½ cu yd | 167.8 | 167.8 | 167.8 | 0 |
| Shovel, 6 cu yd | 197.9 | 197.9 | 195.0 | + 1.5 |
| Crane, truck mounted | 168.2 | 168.2 | 166.2 | + 1.2 |
| Crane, tractor mounted | 135.1 | 135.1 | 135.1 | 0 |
| Bucket, clam shell | 162.9 | 162.9 | 157.5 | + 3.4 |
| Bucket, dragline | 169.3 | 169.3 | 169.3 | 0 |
| **Scrapers and Graders** | 166.6 | 166.6 | 165.7 | + 0.5 |
| Scraper, 4 Wheel, 8-10.5 cu yd | 155.0 | 155.0 | 155.0 | 0 |
| Scraper, 4 Wheel, 12-15 cu yd | 156.8 | 156.8 | 156.8 | 0 |
| Scraper, 2 Wheel, 15-19.5 cu yd (a) | 126.2 | 126.2 | 123.7 | + 2.0 |
| Grader, heavy duty | 174.1 | 174.1 | 172.6 | + 0.9 |
| Grader, light & medium | 170.9 | 170.9 | 171.7 | — 0.1 |
| **Tractors (non-farm, incl industrial)** | 193.6 | 193.6* | 187.8 | + 3.1 |
| Wheel type, off-highway (a) | 129.2 | 129.2 | 128.2 | + 0.8 |
| Crawler type, 50-74 dhp | 203.5 | 203.5 | 191.9 | + 6.0 |
| 75-99 dhp | 204.3 | 204.3 | 196.4 | + 4.0 |
| 100-154 dhp | 198.2 | 198.2 | 191.3 | + 3.6 |
| 155-200 dhp | 203.3 | 203.3 | 201.3 | + 1.0 |
| **Machinery, Tractor Mounted** | 176.2 | 176.2 | 168.6 | + 4.5 |
| Dozer, cable controlled | 164.8 | 164.8* | 154.4 | + 6.7 |
| Dozer, hydraulic controlled | 201.9 | 201.9 | 186.6 | + 8.2 |
| Cable power control unit | 152.9 | 152.9 | 151.4 | + 0.9 |
| Loader, tractor shovel | 163.2 | 163.2 | 161.5 | + 1.0 |
| **Specialized Machinery** | 158.7 | 158.7 | 157.9 | + 0.5 |
| Ditcher | 153.8 | 153.8 | 159.2 | — 3.4 |
| Roller, tandem | 226.4 | 226.4 | 220.2 | + 2.8 |
| Roller, 3 wheel | 178.7 | 178.7 | 174.9 | + 2.2 |
| Ripper and rooter | 156.6 | 156.6 | 150.5 | + 4.0 |
| Dewatering pump, 10 M gph | 111.5 | 111.5 | 110.3 | + 1.2 |
| Dewatering pump, 90 M gph | 151.5 | 151.5 | 151.0 | + 0.3 |
| **Portable Air Compressors** | 167.5 | 167.5 | 167.5 | 0 |
| **Contractor's Air Tools** | 181.6 | 181.6 | 181.6 | 0 |
| **Mixers, Pavers, Spreaders** | 161.8 | 161.8 | 157.3 | + 2.9 |
| Mixer, portable, 11 cu ft | 166.8 | 166.8 | 165.9 | + 1.0 |
| Mixer, portable, 16 cu ft | 172.7 | 172.7 | 172.2 | + 0.3 |
| Mixer, truck, 6 cu yd | 135.1 | 135.1 | 132.4 | + 2.0 |
| Mixer, paving, 34 cu ft | 196.7 | 196.7 | 193.5 | + 1.6 |
| Concrete finisher & spreader | 201.9 | 201.9 | 196.7 | + 2.6 |
| Bituminous distributor | 126.2 | 126.2 | 122.3 | + 3.1 |
| Bituminous spreader | 179.4 | 179.4 | 170.2 | + 5.4 |
| Bituminous paver | 165.6 | 165.6 | 163.2 | + 1.5 |
| **Off-Highway Trucks, Wagons (b)** | 102.5 | 102.5 | 101.1 | + 1.3 |
| Contractors off-highway truck (b) | 102.0 | 102.0 | 101.1 | + 0.9 |
| Trailer dump wagon (b) | 106.7 | 106.7 | 101.4 | + 5.2 |

• (a) January, 1955 = 100 • (b) January, 1958 = 100 * Revised
BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49 = 100

## Equipment Orders Firm Up As Contracts Set Record

Orders for new construction equipment edged up in August, halting a two-months downtrend in the McGraw-Hill Economics Department's New Orders Index for construction and mining machinery. The August index was 256, based on 1949 as 100, up 2% from July (revised upward from 245 to 252).

Though the orders upturn came as no surprise in view of the booming pace of heavy construction contractors' new business, order volume remained below a year ago for the sixth consecutive month. Less discouraging news for equipment makers was the fact that this gap was only –5% in August, whereas in June and July the 1959-60 decline ranged from –16% to –24%.

For the first 8 months of '60, the new orders index averaged 8% less than the 1959 average, which was the highest on record. The index is based on dollar value of orders for all products made by cooperating companies, each company being predominantly a manufacturer of construction or mining machines.

Though equipment buying lags behind last year, contractors' new business is piling up at a brisk pace. September was a record for the month, the fourth consecutive such mark set by heavy construction contracts. Though the Contract Award Index edged down seasonally from 296 in August to 285 in September, based on average monthly volume in 1949 as 100, this was 16% more than September 1959.

List prices of construction equipment held steady between August 15 and September 15. This was the first month of absolutely no change in any of the many types of equipment covered by the Bureau of Labor Statistics indexes. However, the index value of 176.7, based on average prices in 1947-49 as 100, is the highest on record and 2.4% above a year ago.

# States Aren't Using Extra Highway Aid

CONTRACTORS racked up more new highway and bridge construction contracts in July-September than in any other quarter except July-September 1958. This increase lifts the 9-months' volume 15% above '59 and only 2% shy of 1958's record.

Contracts would have increased more if state highway departments had utilized all available federal aid funds. But they didn't.

The states went into the July-September quarter with a carryover of $177 million of unused federal aid. To stimulate the lagging program, Commerce Secretary Frederick Mueller at midyear scotched the quarterly obligation schedule set by the Bureau of Public Roads, and gave states the green light to obligate the whole July-December schedule of $1.37 billion in the three months July-September.

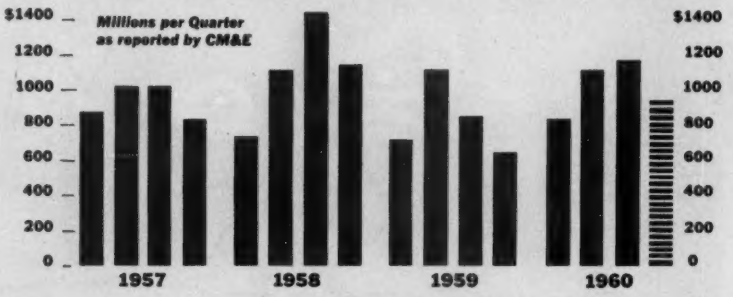
But in this quarter the states used $21 million less than the $718 million originally available. Unused federal aid increased as a result to some $200 million.

Many states are "on schedule" in terms of the regular quarterly schedule, but probably few will take advantage of Secretary Mueller's permission granted early in October to go ahead and obligate the $718 million federal aid originally scheduled for the January-March '61 quarter. It's unlikely that the states would step up contracting in October-December, a time when contracting shifts into seasonably lower gear.

Nevertheless, contracting during the rest of 1960 will probably show a 35% or greater jump over the very low year-ago volume. The full year should top 1959 by about 19%.

*continued on page 45*

## Highway & Bridge Awards: 2nd Biggest Year




## Highway and Bridge Contracts by States (In millions of dollars)

| State and Region | Contracts Let in First 9 Months 1956 | 1957 | 1958 | 1959 | 1960 | Change '59-'60 Actual 9 mos. % | Plans* 12 mos. % |
|---|---|---|---|---|---|---|---|
| U. S. – 50 States | $2,276.5 | $2,897.8 | $3,266.4 | $2,766.0 | $3,188.8 | + 15 | + 27 |
| NEW ENGLAND | 297.7 | 170.3 | 175.3 | 174.7 | 127.8 | - 27 | + 35 |
| Maine | 12.6 | 10.5 | 27.5 | 10.2 | 12.6 | + 24 | + 33 |
| New Hampshire | 12.3 | 11.4 | 15.5 | 19.2 | 11.6 | - 40 | + 18 |
| Vermont | 4.9 | 8.8 | 16.1 | 25.2 | 15.3 | - 39 | - 23 |
| Massachusetts | 68.3 | 46.3 | 66.9 | 70.4 | 61.4 | - 13 | + 93 |
| Rhode Island | 11.9 | 12.4 | 14.2 | 4.0 | 6.6 | + 65 | +152 |
| Connecticut | 187.7 | 80.9 | 35.1 | 45.7 | 20.3 | - 56 | - 36 |
| MIDDLE ATLANTIC | 304.9 | 538.5 | 557.0 | 394.3 | 613.5 | + 56 | + 59 |
| New York | 116.7 | 251.0 | 265.4 | 198.3 | 356.3 | + 93 | + 33 |
| New Jersey | 36.0 | 41.6 | 52.6 | 64.6 | 34.1 | - 47 | + 67 |
| Pennsylvania | 102.9 | 184.1 | 164.7 | 67.8 | 135.5 | +100 | +181 |
| Maryland | 33.1 | 39.4 | 46.9 | 41.4 | 61.2 | + 48 | + 23 |
| Dist. of Columbia | 8.3 | 10.9 | 15.1 | 14.9 | 20.4 | + 37 | + 41 |
| Delaware | 7.9 | 11.5 | 12.3 | 7.3 | 6.0 | - 18 | + 91 |
| SOUTH | 383.6 | 453.1 | 625.4 | 577.3 | 601.6 | + 4 | + 23 |
| Virginia | 49.1 | 66.3 | 49.1 | 25.4 | 103.5 | +307 | + 52 |
| West Virginia | 11.5 | 17.7 | 27.9 | 38.2 | 22.2 | - 42 | + 21 |
| North Carolina | 38.8 | 57.4 | 58.6 | 52.3 | 28.9 | - 45 | 0 |
| South Carolina | 23.2 | 26.3 | 53.7 | 46.4 | 33.4 | - 28 | - 21 |
| Georgia | 20.3 | 42.7 | 68.7 | 63.9 | 33.4 | - 48 | + 56 |
| Florida | 75.1 | 68.5 | 90.6 | 92.3 | 85.3 | - 8 | + 7 |
| Alabama | 33.5 | 25.0 | 38.3 | 52.3 | 54.0 | + 3 | + 28 |
| Mississippi | 10.8 | 35.8 | 30.6 | 39.9 | 36.3 | - 9 | + 13 |
| Louisiana | 71.4 | 46.8 | 82.8 | 66.5 | 90.5 | + 36 | + 2 |
| Kentucky | 19.4 | 31.6 | 69.6 | 60.3 | 45.5 | - 25 | + 15 |
| Tennessee | 30.5 | 35.0 | 55.5 | 39.8 | 68.6 | + 72 | + 87 |
| MIDDLE WEST | 422.2 | 718.7 | 701.0 | 530.4 | 609.4 | + 15 | + 18 |
| Ohio | 103.3 | 130.4 | 228.8 | 79.0 | 143.1 | + 81 | + 5 |
| Indiana | 25.2 | 26.8 | 79.1 | 64.2 | 50.3 | - 22 | - 12 |
| Illinois | 127.0 | 400.3 | 206.8 | 204.4 | 204.5 | 0 | - 1 |
| Wisconsin | 54.1 | 44.8 | 69.2 | 68.7 | 59.7 | - 13 | - 9 |
| Michigan | 112.6 | 116.4 | 117.1 | 114.1 | 151.8 | + 33 | +109 |
| MISS. TO ROCKIES. | 586.1 | 658.5 | 791.9 | 746.9 | 744.1 | 0 | + 14 |
| Minnesota | 62.7 | 51.5 | 66.8 | 60.1 | 61.1 | + 2 | - 18 |
| Iowa | 65.2 | 75.5 | 80.1 | 86.1 | 86.3 | 0 | + 15 |
| Missouri | 37.1 | 68.9 | 84.0 | 59.6 | 89.1 | + 49 | + 73 |
| Arkansas | 20.4 | 15.5 | 29.2 | 29.7 | 32.9 | + 11 | - 2 |
| North Dakota | 21.2 | 28.1 | 36.0 | 38.4 | 24.8 | - 35 | - 14 |
| South Dakota | 23.4 | 20.9 | 22.7 | 34.7 | 30.0 | - 14 | - 6 |
| Nebraska | 20.3 | 24.1 | 31.4 | 25.2 | 32.1 | + 27 | + 48 |
| Kansas | 40.4 | 41.5 | 57.9 | 43.3 | 45.2 | + 4 | + 8 |
| Oklahoma | 49.6 | 39.6 | 71.1 | 36.1 | 37.0 | + 2 | + 87 |
| Texas | 162.6 | 174.0 | 202.9 | 255.3 | 196.7 | - 23 | - 10 |
| Montana | 22.4 | 16.3 | 32.4 | 17.0 | 25.2 | + 48 | +113 |
| Wyoming | 13.5 | 23.5 | 18.8 | 13.6 | 26.2 | + 93 | + 63 |
| Colorado | 31.3 | 46.2 | 33.7 | 30.0 | 37.0 | + 23 | + 27 |
| New Mexico | 16.0 | 32.9 | 24.9 | 17.8 | 20.5 | + 15 | + 47 |
| FAR WEST | 282.0 | 358.7 | 415.8 | 342.4 | 492.4 | + 44 | + 42 |
| Idaho | 11.6 | 9.4 | 19.1 | 17.4 | 17.0 | - 2 | + 76 |
| Utah | 11.2 | 13.8 | 20.9 | 24.3 | 16.4 | - 33 | + 29 |
| Arizona | 17.6 | 17.4 | 26.7 | 31.6 | 26.6 | - 16 | + 8 |
| Nevada | 8.1 | 13.0 | 14.1 | 7.2 | 9.1 | + 26 | +240 |
| Washington | 51.6 | 47.6 | 61.7 | 42.0 | 73.9 | + 76 | + 27 |
| Oregon | 35.3 | 33.9 | 59.8 | 28.8 | 47.0 | + 63 | + 47 |
| California | 146.6 | 223.6 | 213.5 | 181.7 | 288.5 | + 59 | + 27 |
| Alaska | – | – | – | 5.0 | 6.8 | + 36 | +682 |
| Hawaii | – | – | – | 4.4 | 7.1 | + 61 | +114 |

* Only state highways and bridges.

# Here's why the NEW No. 944 Traxcavator is bringing NEW standards to wheel loader operation

## CHECK THESE FEATURES

- **2 cu. yd. bucket**
- **Power shift transmission** and torque converter—provide smooth, instant finger-tip shifting. No clutching necessary.
- **Travel-work range power selection**—travel range gives 2-wheel drive for roading. Work range automatically puts power to all 4 wheels.
- **Precision, 2-pedal brakes**—left brake neutralizes the transmission as it stops the machine . . . throwing all power to hydraulic system. This gives superior loading action in tough material. Right brake leaves the transmission engaged for full control of the machine when creeping or working on slopes.
- **Safe operation**—bucket lift arms and pivot points are completely in front of operator's area. This allows freedom of movement and wide visibility. Steps offer easy access. No need to climb over tires or bucket mechanism. Fenders protect operator from mud and stones . . . provide handy platform for checking engine.
- **Extra long reach**—50¾" at 7' dumping height—for faster, more accurate loading.
- **Choice of two new engines**—whatever your job or fuel requirement there's a No. 944 powered to meet the need. Diesel engine is compact, 4-cylinder turbocharged for maximum efficiency. Or there's a 6-cylinder gas engine.
- **105 HP***—delivered from either engine. Plenty of power for machine drive and hydraulic system.
- **4 speeds forward**—0-24 MPH.
- **4 speeds in reverse**—0-30 MPH. Reverse speeds are 25% faster than forward speeds to reduce cycle time.
- **Automatic kick-out devices** on bucket control levers—the lift control releases at dumping height. Tilt control positions the bucket for digging.
- **Accessible controls**—forward-reverse lever is located on steering column. Bucket controls are at the operator's right hand. Speed range selector and work-travel lever are on the operator's left . . . within easy reach. The No. 944 has push-button starting.
- **Full line of attachments available**—including forks, cab, special buckets, and the exclusive Caterpillar Side Dump Bucket that gives added efficiency . . . speeds cycle time.

**For comparative purposes, the maximum rating of the diesel engine is 135 horsepower.*

Add 'em up. All of these features are designed to give fast, easy, safe operation. Add bold new design, sound engineering, quality construction, responsible parts and service coverage. All of these make the No. 944 Traxcavator pay off big on any wheel loader operation. See your Caterpillar Dealer. Ask for a demonstration. Compare the No. 944 with other loaders you've seen. Then you'll discover why this machine has all the bonus features and performance potential to bring new standards to wheel loader operation *on your job.*

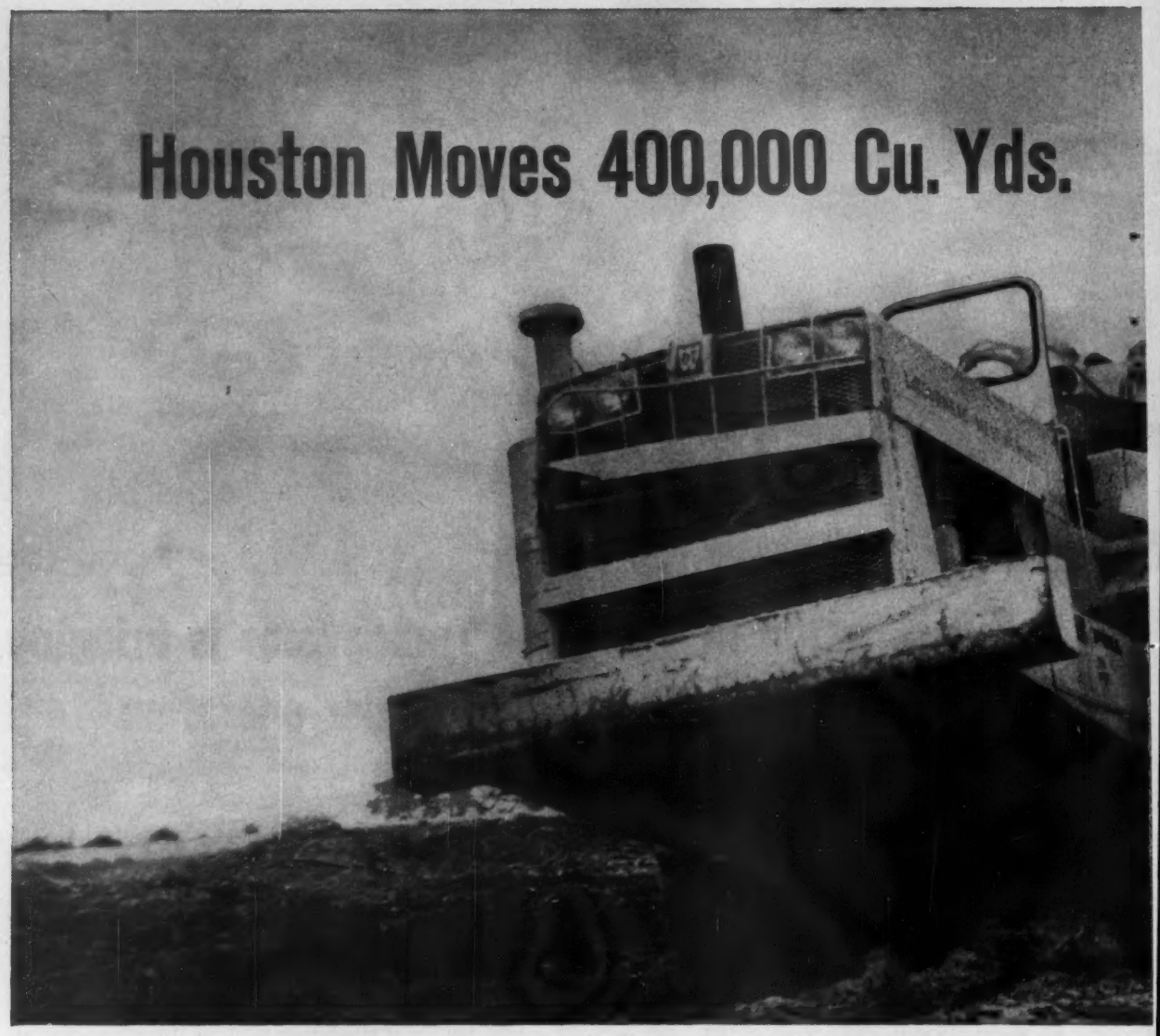
Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

**CATERPILLAR**

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

A GREAT NEW PRODUCT IN THE CATERPILLAR TRADITION

# Houston Moves 400,000 Cu. Yds.



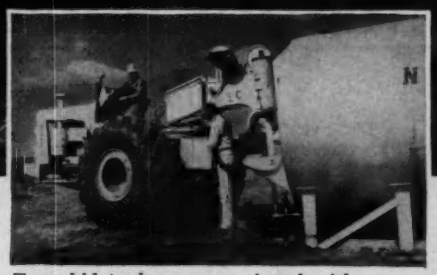
## Equipment Performance Credited to

Houston Construction is a young organization in the Shreveport, La. area and the job was an important one to them. The company received a major portion of the work on what is called the Hern St. Extension and Blanchard Road job on the edge of Shreveport. Houston had the earthwork, clearing, grubbing and fencing contract. Earthmoving was the largest part of the job since some 400,000 cubic yards were involved.

One factor that put a strain on the equipment was the long hauling cycle. Eighty per cent of the hauls were two to six miles round trip. Houston's four big earth-movers were running full tilt night and day all summer, picking up loads and roaring across the countryside to empty them. Temperatures hit well over 100°. With such heat and the long, rough hauls, Houston's earth-movers worked under rugged conditions.

Mr. Houston Free, president of Houston Construction stated, "We picked Cities Service as a supplier because of the excellent service they offered. We picked Cities Service C-500 oil for our heavy equipment because we could ill afford any down-time on these machines and we wanted the best lubricant available. The oil proved itself on this job and the services of the Cities Service

# on Long Haul Cycle



Two skid tanks were equipped with pumps driven by small gasolene engines to allow Houston to fuel equipment quickly.

Neil Carmony, Cities Service Lubrication Engineer, conferred frequently with Houston supervisors at the job site.

## Cities Service C-500 Oil

Lubrication Engineer have been very valuable."

Using the best lubricant available is certainly a small investment in safeguarding your valuable equipment. Cities Service C-500 is designed to provide extended service life in diesel engines even when operating on high sulphur fuels.

For information on the "C" Series oils write: Cities Service Oil Co., Sixty Wall Tower, New York 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

*Circle 43 on Reader Service Card*

# UNIT gives you more Earning Power on dragline jobs

You'll find two essentials of profitable dragline service combined in a UNIT — speedy operating cycles, through full use of power, and outstanding stability. You save power and gain speed with UNIT direct-in-line drive from engine to main machinery. Power is transmitted through a worm drive with minimum loss due to friction. This is one of many UNIT built-in values that pay off in greater job output.

UNIT extra long crawlers and wider axles and shoes provide perfect balance, too. Stability is superior . . . you can work faster without continuous tipping on long or low boom work.

A UNIT DRAGLINE gives you these two important advantages . . . and many more. You get a one-piece cast main machinery gear case with all gears, shafts, and bearings operating in an oil bath; automatic traction brakes; twin hook rollers; and all disc-type operating clutches.

Your UNIT dealer has full information on ½ to ¾-yd. draglines, fully convertible to other front ends. See him soon for the full UNIT story.

UNIT

UNIT CRANE & SHOVEL CORP.
6305 W. Burnham Street
Milwaukee 19, Wisconsin

**SHOVELS:** ½ to ¾ YDS. • **HOES:** ½ to ¾ YDS. • **CRANES:** 5½ to 40 TONS • **DRAGLINES:** ½ to ¾ YDS.

*Circle 44 on Reader Service Card*

## CONSTRUCTION EQUIPMENT SHIPMENTS — 2nd Quarter & 1st Half 1960

**US Bureau of Census. Based on reports from 211 plants. Exports included.**

| Type of Equipment | Second Quarter Dollar Value | Number | Change from 1st Q '60 Value % | Change from 1st Q '60 Number % | Change from 2nd Q '59 Value % | Change from 2nd Q '59 Number % | First Half Dollar Value | First Half Number | Change from 1st Half '59 Value % | Change from 1st Half '59 Number % |
|---|---|---|---|---|---|---|---|---|---|---|
| Tractors | $103.9 | 7636 | + 0.4 | — 9 | — 5 | — 39 | $207.4 | 16059 | + 3 | —23 |
| Tractor-Mounted Machinery | 28.0 | na | — 7 | na | —26 | na | 56.0 | na | — 8 | na |
| Tractor Shovels | 66.1 | 5848 | + 21 | + 6 | — 1 | + 4 | 120.4 | 11368 | + 6 | +18 |
| Scrapers | 14.5 | 1244 | + 68 | +44 | —39 | — 35 | 23.1 | 2105 | —35 | —32 |
| Ditchers, Trenchers | 4.1 | 1625 | + 42 | +85 | — 6 | +101 | 7.0 | 2505 | — 6 | +79 |
| Off-Highway Trucks | 18.5 | 734 | + 21 | +11 | — 6 | — 13 | 33.8 | 1396 | + 1 | — 1 |
| Off-Highway Trailers, Wagons | 0.8 | 48 | + 19 | —16 | —51 | — 68 | 1.5 | 105 | —45 | —55 |
| Motor Graders | 28.8 | 2368 | + 14 | +19 | — 5 | + 4 | 54.0 | 4361 | + 2 | + 8 |
| Rollers | 9.1 | 2734 | + 57 | +91 | +24 | + 18 | 14.9 | 4166 | +26 | +13 |
| Compactors | 0.7 | 88 | + 15 | + 5 | —87 | — 98 | 1.3 | 172 | —85 | —94 |
| Mixing & Paving Machinery | 20.2 | na | + 51 | na | na | na | 33.7 | na | na | na |

### *Equipment Shipments Up Seasonaly, But Below '59*

Dollar value of new construction equipment moving out of manufacturers' hands increased in the second quarter for several types reported to the US Bureau of Census.

Despite seasonal increases, shipments volume was below a year ago for major types of equipment. These 1959-60 declines ranged from only 1% for tractor shovels to 51% for off-highway trailers and wagons and 87% for compactors.

For the first six months, however, 1960 shipments exceeded last year for tractors, tractor shovels, off-highway trucks, motor graders and rollers. Trailing last year's dollar value of shipments were scrapers, ditchers and trenchers, off-highway trailers and wagons, and compactors.

The table shows the shipments record, including exports, of selected types of equipment, as reported by 211 manufacturersr to the US Bureau of Census (and published in Census' M35D report titled "Construction Machinery, Second Quarter 1960").

*contracts awarded on next page*


BUILD HIGHWAYS THE ROME WAY

**CLEARING RIGHT-OF-WAY.** Rome K/G Clearing Blade shears off trees and brush, cuts stumps out below ground, then piles cut trees and stumps for clean burning.

**AERATING.** Rome Model TRH 20-30 Hinge Type Offset weighs over 9,000 lbs. — heavy duty construction for less maintenance, longer life.

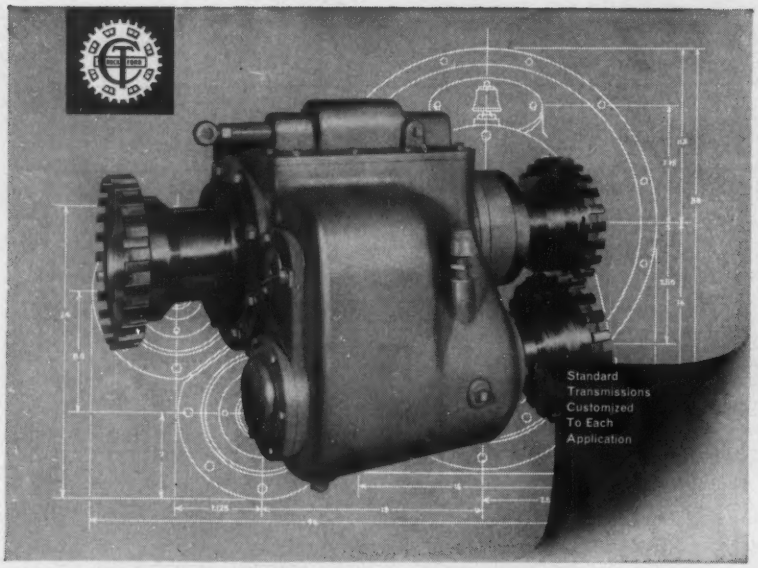
**MIXING AND BLENDING.** Rome Model TRCH 10-36 Hinge Type Offset Disk Plowing Harrow cuts up to 13" deep for low cost mixing, blending, bonding lifts.

**TOUGH, VERSATILE AND MONEY SAVING.** Rome Disk Plowing Harrows are available in many sizes and types. For aerating, mixing, scarifying, pulverizing—there's a ROME for your job, your equipment. See your Rome-Caterpillar dealer.

ROME

ROME PLOW COMPANY
Cedartown, Georgia

*Circle 45 on Reader Service Card*




Cotta split-shaft power take-off transmission

**Use full engine power for truck travel or auxiliary equipment with Cotta split-shaft power take-off**

Need truck mobility to transport auxiliary equipment quickly . . . *plus* full engine power for pumps, winches, electric sets, and compressors after they arrive on the job?

Cotta's split-shaft power take-off transmissions lead full engine horsepower to rear axles, *or* to auxiliary equipment when heavy loads demand it. Auxiliary engines can be eliminated. Reduced gear loads and constant mesh gears on both shafts prolong equipment life.

**PTO flexibility** — Standard truck transmission ratios combine with Cotta's split-shaft ratios to provide exceptional drive flexibility for road travel or PTO performance. Customized gear-ratio variations are available for individual jobs.

**Parts availability** — Guaranteed Cotta parts and service keep your equipment on the job. Round-the-clock expediting of gears or shafts means delivery in hours after your order is received by our transmission specialists.

See our catalog in *Sweet's Product Design File*. Check the descriptions of standard and custom applications. Then call Cotta (TWX-RK 7720 or phone WO 4-5671) for complete details on versatile transmission designs.

COTTA

HEAVY-DUTY TRANSMISSIONS

Pumping Locomotives Construction Drilling

COTTA TRANSMISSION CO., ROCKFORD, ILL.

*Circle 46 on Reader Service Card*

## SOME BIG CONTRACT AWARDS OF THE MONTH

**H. C. Price Co.,** Bartlesville, Okla.; **Western Pipeline Inc.,** Austin, Tex., and **J. P. Neill & Co., Inc.,** Dallas, Tex. Construct a 36-in. gas pipe line in California, Oregon, Idaho and Washington. **Price-Poole of Canada, Ltd.** will construct section in British Columbia and Alberta. Pacific Gas Transmission Co., 245 Market St., San Francisco, Calif. $330,000,000.

**Malan Construction Corp.,** New York, N. Y. Erect two terminal buildings at O'Hare International Airport, Chicago, Ill. Dept of Purchases, City Hall, Chicago 2, Ill. $18,366,000.

**Arthur A. Johnson Corp.,** New York, N. Y. Construct the anchorages for the Narrows Bridge in New York harbor. Triborough Bridge and Tunnel Authority, Administration Bldg., Randalls Island, New York 35, N. Y. $17,920,913.

**Kraus-Anderson, Inc.,** Minneapolis, Minn. Construct a shopping center in Brooklyn Center, Minn. Dayton's 701 Nicollet Ave., Minneapolis $10,000,000

**George K. Heebner, Inc.,** Philadelphia, Pa. Erect a five-story gypsum plant and a one-story office building and laboratory in Wilmington, Del. Bestwall Gypsum Co., Ardmore, Pa. $7,500,000.

**Consolidated Engineering Co.,** Baltimore, Md., Construct section of Mercy Hospital in Baltimore. Sisters of Mercy, Mercy Hospital, Calvert and Saratoga Sts., Baltimore. $7,140,000.

**Fredericksen & Kasler,** Sacramento, Calif. Construct 13.3 mi. of four-lane freeway in Kern County. State Division of Highways, 1120 N St., Sacramento, Calif. $7,093,320.

**George M. Brewster & Sons Co.,** Bogota, N. J. Construct sand drains and related work on right of way for 1.1 mi. of highway near Teaneck, N. J. State Highway Dept., 1035 Parkway Ave., Trenton. $6,771,786.

*continued on page 49*

# 25% more hole per hr.

## in hard limestone with high silica content

***... than with competing rig***

Quarry performance like this is standard with REICHdrill. Why? Because:

- ... all-hydraulic top-drive rotary provides infinitely variable speed of drill rotation – the right speed for every formation.
- ... direct-drive to drill stem saves power loss.
- ... all air used to drill and clean hole.
- ... no complicated transmission, no rotary table.
- ... no kelly bar – in and out of the hole faster.
- ... instant safety torque release protects all drive components.

REICHdrill has built a reputation for keeping maintenance costs low; footage records high.

And these additional REICHdrill features help set drilling records: masts incline for angle drillings; CP heavy-duty compressors assure plenty of air to meet all demands; fast-acting, ram-type hydraulic leveling jacks permit use of most rig weight for down pressure; CP "Air-Blast" Bits for extra footage in toughest formations.

*For further information, write:*

**REICHdrill**

1439 ASH STREET, TERRE HAUTE, INDIANA

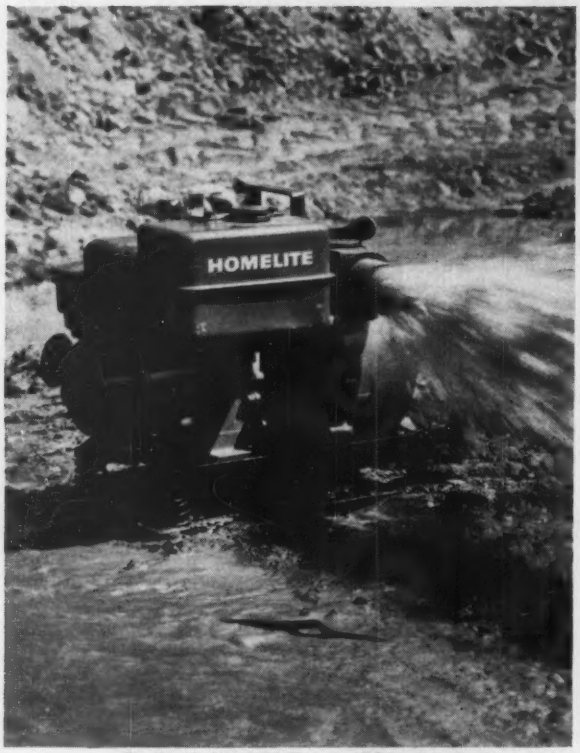
Division: CHICAGO PNEUMATIC TOOL CO.

*T-650 truck-mounted REICHdrill operating in a quarry. Hole size: to 7⅞"; down pressure: 30,000 pounds. Other models available, truck or crawler mounted, with hole size to 16 inches, down pressure to 90,000 pounds.*

*Circle 47 on Reader Service Card*

# NEW!

## Homelite Pumps and Generators with **4-Cycle** Engines




New Homelite Model 44S2, 2" pump with Briggs & Stratton 4-cycle engine.

New Homelite Model 46A115, 1500 watt generator with Clinton 4-cycle engine.

## For Greatest Value at Lowest Cost

NOW you can choose the exact portable pumps and generators your jobs require from the most complete line of models ever offered by any manufacturer: economical, 4-cycle engine driven units or finest-quality models driven by Homelite's famous, 2-cycle engines.

Homelite's new carryable pump and generator units driven by 4-cycle Briggs & Stratton, Clinton and Wisconsin engines give you Homelite-quality in construction, performance and service at new low prices. Pump sizes: 1½", 2" and 3" centrifugals and 3" diaphragm. Generator sizes: 1500, 3000 and 4500 watts. Your choice of gasoline or LP gas operated engines. Compact and lightweight, these units can be carried anywhere they are needed.

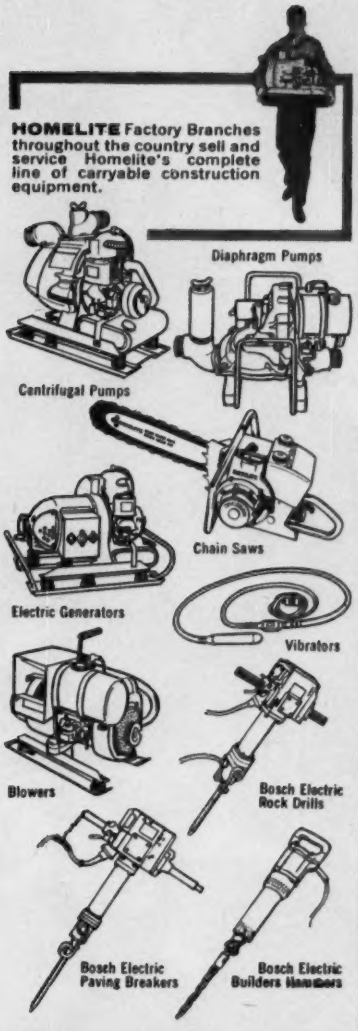
Write or call for complete information and a demonstration on your job. Do it today!

Homelite factory branches are located throughout the country. Your nearest one is as near as your phone. Call them or write for convincing demonstration or rapid service in any way.

**HOMELITE**

CARRYABLE PUMPS • GENERATORS
BLOWERS • CHAIN SAWS

**HOMELITE** • A DIVISION OF TEXTRON INC., 1011 RIVERDALE AVE., PORT CHESTER, N. Y.
In Canada — Terry Machinery Co., Ltd.
*Circle 48 on Reader Service Card*




## HOMELITE FACTORY BRANCHES

**EAST:** CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

**SOUTH:** GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

**MID-WEST:** ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

**WEST:** CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

**HOMELITE**

A DIVISION OF TEXTRON INC.

1011 Riverdale Ave., Port Chester, New York

*In Canada:*
TERRY MACHINERY CO. LTD.


## CONTRACTS AWARDED . . .

*continued*

**Savin Bros., Inc.,** Bloomfield, Conn. Construct 8.26 mi. of concrete pavement including bridge structures and access roads in Broome County. State Dept. of Public Works, State Office Building, Albany, N. Y. $6,663,660.

**F. H. McGraw & Co.,** Hartford, Conn. Construct an office building in Hartford, Conn. Connecticut Bank & Trust Co., 560 Main St., Hartford. $6,500,000.

**Frank J. Rooney, Inc.,** Miami, Fla. Erect a 353 unit apartment building complex with swimming pool and parking garage in Bal Harbour, Fla. Bobin Enterprises, Inc., 940 Lincoln Rd., Miami Beach, Fla. $6,536,000.

**George A. Fuller Co.,** Chicago, Ill. Construct a pharmaceutical research laboratory in Skokie, Ill. G. D. Searle & Co., Searle Parkway, Skokie. $6,000,000.

**Century Equipment Rental Corp., Psaty Corp.,** and **Columbus Construction Co.,** all of New York. A joint venture to construct 7.31 mi. of concrete pavement including bridge structures in Nassau and Suffolk Counties. State Dept. of Public Work, State Office Building, Albany. $5,786,299.

**Baltimore Contractors, Inc.,** Baltimore, Md. Erect a department store in Baltimore. Food Fair Properties, Inc., 355 Lexington Ave., New York, N. Y. $5,000,000.

**W. B. Gibson Co.,** Warren, Ohio. Construct a shopping center on a 38-acre site in Toledo, Ohio. Don Castro, 42 S. 4th St., Columbus. $5,000,000.

**Mayfair Construction Co.,** Chicago, Ill. Construct an airline hangar at O'Hare International Airport, Chicago. Dept. of Purchases, City Hall. $4,840,600.

**Wright Contracting Co.,** Odenton, Md. Construct section of the Jones Falls Expressway including four bridge structures. Bureau of Highways, 303 Municipal Bldg., Baltimore. $4,845,514.

**Peter Kiewit Sons' Co.,** San Francisco, Calif. Grade and pave 3.8 mi. of four-lane freeway for the

*continued on page 52*


# COMMENT
*from the*
## BUTLER ENGINEER

### Of Two Fantastic World's Records

They don't have a concrete highway batching competition at the Olympic Games, but they should — because the BUTLER BIN TX-4 would win it — with all others biting dust. (Cement, sand and aggregates — that is.)

On highway 31 near Mackinaw City, Mich. on August 11, Denton Const. Co., laid 7250 lineal feet, of 24 foot wide pavement, 9 inches thick in 12 hours with 4 pavers and a Butler TX-4 Batching Plant. That's a batch every 12 seconds . . . a new world's record. Even the Russians admit it.

Then on August 25 Denton took another hitch in his belt and did 8,036 lineal feet — also 24 feet wide, 9 inches thick, in 12 hours. That is 3,898 batches — again of course, through his 4 bin Butler TX-4 with 4 batchers on each bin.

Each batch consisted of 728 pounds of cement, 1586 pounds of sand, 1532 pounds of fine stone, and 1512 pounds of coarse stone. Take cement for example: 7,548 barrels in the 12 hours. That's the equivalent of 19 railroad carloads.

Denton had one cement elevator and two blower delivery trucks.

Obviously that's another world's record — the third Denton has racked up in two years. In 1958 he did 6,029 lineal feet in a 12 hour day. But 8,036 feet is sheer darn paving genius.

Krushchev, rumor tells us, is biting his not immaculate fingernails and thinking of getting a Butler TX-4 Batching Plant. Swell! But don't worry. Our country is safe. He hasn't Denton's know-how.

*Be seeing you*

*The Butler Engineer*

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

*Circle 49 on Reader Service Card*

# SWITCH TO KON-TORK DIFFERENTIAL..

**KON-TORK differential provides every Allis-Chalmers motor scraper with maximum traction to match any working condition—provides you with all-weather production.**

Only Allis-Chalmers offers exclusive KON-TORK differential in every motor scraper. This traction-boosting benefit makes dirt pay under severe job conditions.

KON-TORK works automatically, whenever it's needed. In the cut, on the haul or soft fill, it helps you by automatically controlling the transfer of torque to each drive wheel . . . giving you the benefit of all available traction *all the time.*

*Example:* When one drive wheel hits soft going, KON-TORK takes hold and transfers torque from the slipping wheel to the wheel with solid footing to keep the machine moving out. Another nice thing

**move ahead with**

*Circle* 51 *on Reader Service Card*

# .TRACTION MAGIC, EVEN IN MUD

about KON-TORK . . . it's simple! Only five working parts . . . never needs adjustment!

But this is only one of many features that keep Allis-Chalmers motor scrapers out front on every job. You should see what *full-power steering—double-acting bowl jacks—hydraulic forced ejection and highest apron lift* can do for your production. Try any one of 3 models from 10 to 30 yards. See for yourself. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

KON-TORK is an Allis-Chalmers trademark.

## ALLIS-CHALMERS

...power for a growing world

the **SWENCH®**

LOOSENS TOUGH NUTS
THAT EVEN POWER
TOOLS CAN'T BUDGE



WHEEL LUGS on buses and trucks usually require the "beef" and skinned knuckles of two men to loosen. SWENCH does the job faster at less cost.

FROZEN HEX NUT on this molding machine caused 36 hours down time when removed by ordinary methods. Just 7 SWENCH impacts moved this tough baby.

RAILROAD HOPPER DOORS easily rust shut. Often it takes a 4-man crew a full day to loosen them. One man and a SWENCH does the job in just 7 or 8 impacts.

Discard that old-fashioned sledge. Put your torch away. Think before you buy another power wrench. Here's a *manual* wrench that delivers more effective torque than any other tool its size.

HOW?

Power wrenches deliver their torque as many tap-like blows. Ordinary hand wrenches apply a steady torque. Swench, on the other hand, builds up power in its super-strong spring for a mighty wallop, which is released as torsional impact every time the handle is advanced slightly more than 30 degrees. Swench multiplies torque applied to the handle more than 15 times.

Now one man can "Swench off"—in minutes—nuts that used to take a full crew a working day to burn or sledge off.

Swench is completely portable. No power connections needed. No auxiliary equipment to man and maintain. You save on man-hours. You save on maintenance. You save on initial cost. (Swench costs *much less* than a power impact wrench.)

You don't believe it? One demonstration will convince you. Line up your toughest job and give your Industrial Distributor a call. If Swench can't do it, no tool can.

*Don't wrench it—SWENCH IT!*

CURTISS WRIGHT

MARQUETTE DIVISION

1142 Galewood Drive, Cleveland 10, Ohio

*Circle 52 on Reader Service Card*


## CONTRACTS AWARDED . . .
*continued*

Contra Costa approach to the Benicia-Martinez Bridge in California. State Division of Highway, 1120 N St., Sacramento, Calif. $4,696,579.

**L. G. DeFelice & Sons, Inc.,** North Haven, Conn. Construct the middle section of access highway at Dulles International Airport, Chantilly, Va. Federal Aviation Agency, 16th and Constitution Ave., Washington, D. C. $4,335,-119.

**Southwestern Construction Co.,** Houston, Tex. Erect a medical research center in Houston, Tex. Baylor University College of Medicine, 1200 M. D. Anderson Blvd., Houston. $4,303,000.

**Great Lakes Dredge & Dock Co.,** Cleveland, Ohio. Dredge section of the Saginaw River near Bay City, Mich. Corps of Engineers, 1101 Washington Blvd., Detroit 26. $4,396,294.

**Poirier & McLane Corp.,** New York, N. Y. Grade and pave section of Interstate Rte. 287 in Middlesex County. State Highway Dept., 1025 Parkway Ave., Trenton. $4,274,295.

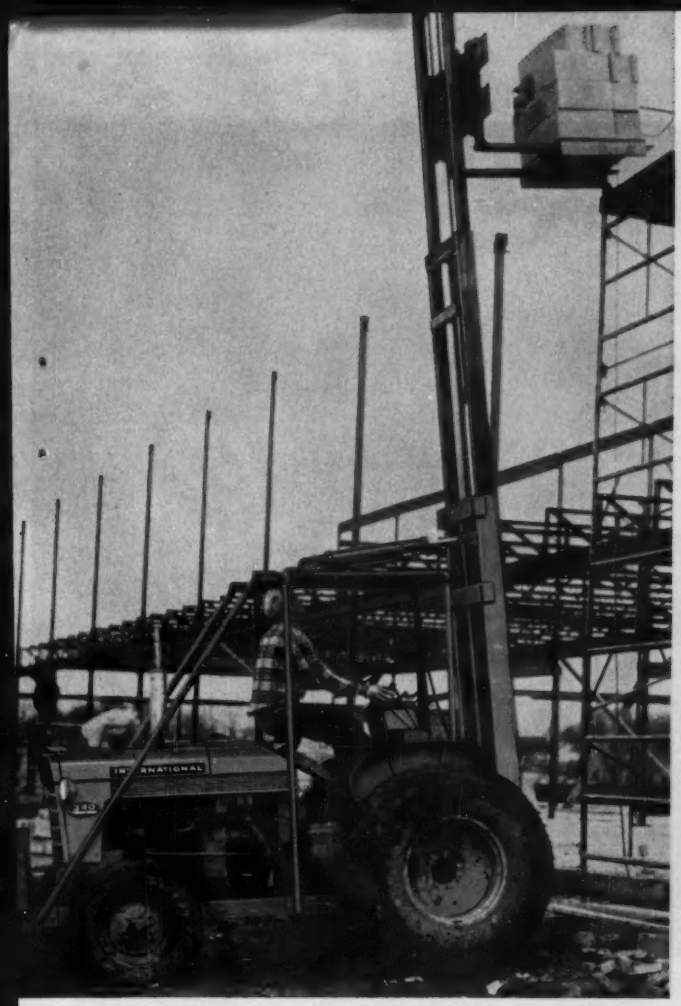
**C. A. Filland, Inc. & Paul Smity Construction Co.,** Tampa, Fla. Erect a ten-story bank and office building in Tampa. Marina Bank & Trust Co., Franklin and Madison Sts., Tampa. $4,000,000.

**Frank H. Wilson Co.,** Ardmore, Pa. Construct a high school in Philadelphia, Pa. Philadelphia Board of Education, 21st and Parkway. $3,992,800.

**Campanella & Cardi Construction Co.,** Warwick, R.I. Construct section of the Lowell connecting highway. Commonwealth of Mass. Dept. of Public Works, 100 Uashua St., Boston. $3,767,531.

**Grinnel Co., Inc.,** Providence, R.I. Install piping system for a steam plant in Paradise, Ky. Tennessee Valley Authority, New Sprankels Bldg. Knoxville, Tenn. $3,750,000.

**Lester Calcium Co.,** Indianapolis, Ind. Construct a housing complex as part of a Retired Teachers Community in Greenwood, Ind. McGuire & Shook Co., 150 W. Market St., Indianapolis. $3,500,-000.



47 hp* International 340 with 21½-foot fork lift, 4,000-lb capacity. Other models, 5,000 and 6,000 lb capacity.

47 hp* International T-340 crawler with ¾ cu yd Drott 4-in-1 . . . loader, dozer, scraper, clamshall all in one!

61 hp* International 460 with International Wagner loader and backhoe . . . leads its field in trenching speed.

*Your IH dealer can help you*

# step up your job profits!

**Whether it's equipment for handling masonry,** brick and block; earthmoving, or other work, your dollars go farther at your IH dealer. One reason—because IH offers such a wide range of power and equipment.

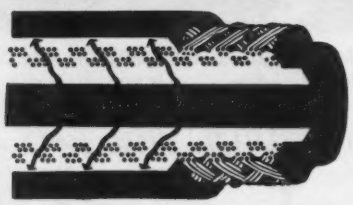
Take materials handling. To match your *exact* job needs, IH offers no less than three power sizes of fork lift-equipped tractors, 47 to 72.5 hp*. . . lift capacities 4,000 to 6,000 pounds . . . lift heights to 21½ feet. Your IH dealer also offers front loaders for loading out sand and other loose materials: dozer blades for grading, leveling, maintenance and cleanup on the job site.

Traditional IH built-in brawn gives greater strength plus traction for work-speeding performance. *International Industrial tractors are stamina-proved!* And, you get maximum protection against lost job time. One of 5,000 IH dealers, backed by a nationwide network of IH parts depots, is near you to give *plus* assurance against downtime.

**Big Cash Bonus for Early Traders!**—See your International Tractor Dealer NOW and save. For a limited time you can get *interest* at the rate of 6% on any trade-in and/or cash payment you make on any purchase of $500 or more. See your IH Dealer NOW and save!

**Maximum flywheel hp at standard sea level conditions.*

**INTERNATIONAL HARVESTER**



## "MORE USE PER DOLLAR"

**Rubber tie-gum penetrates Homoflex braided plies to provide an inseparable tube-to-cover bond. More flexible and lighter weight than any hose for equal pressure.**

# R/M HOMOFLEX HOSE HANDLES EASIER...LASTS LONGER

Homoflex Air Hose is mandrel-made with *no* pre-set twist—it coils and uncoils freely in *any* direction *without* kinking! It's the easiest handling hose you can use with air drills. Exclusive Homoflex construction makes strength member and tube virtually inseparable, assures long, trouble-free service life. Uniform inside and outside diameters permit faster, easier, *safer* coupling . . . faster, fuller flow.

Strong, light weight, and "flexible as a rope", Homoflex Air Hose adds up to real labor and cost savings on the toughest jobs. Homoflex H.D. Air Hose is also available for extra heavy duty and *with yellow cover stripe* for visibility; also in type for water in mine use.

- **SUPER STRONG**
- **PRECISION BUILT**
- **LIGHT WEIGHT**
- **FLEXIBLE AS A ROPE**

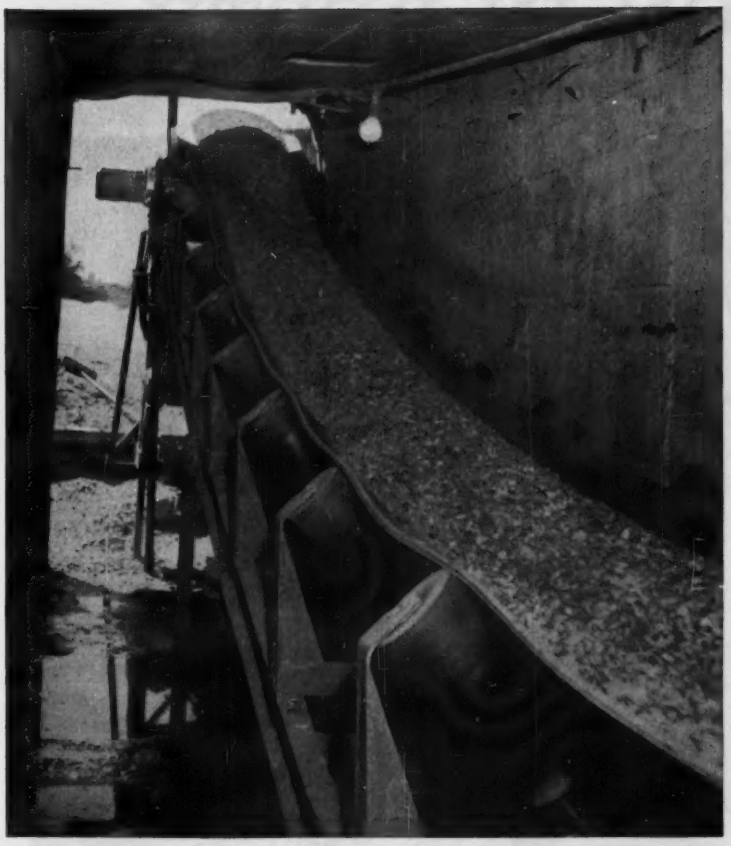
*Write for Bulletins M610 and M694.*

RM-1017

**RAYBESTOS-MANHATTAN, INC.**
**MANHATTAN RUBBER DIVISION, PASSAIC, NEW JERSEY**

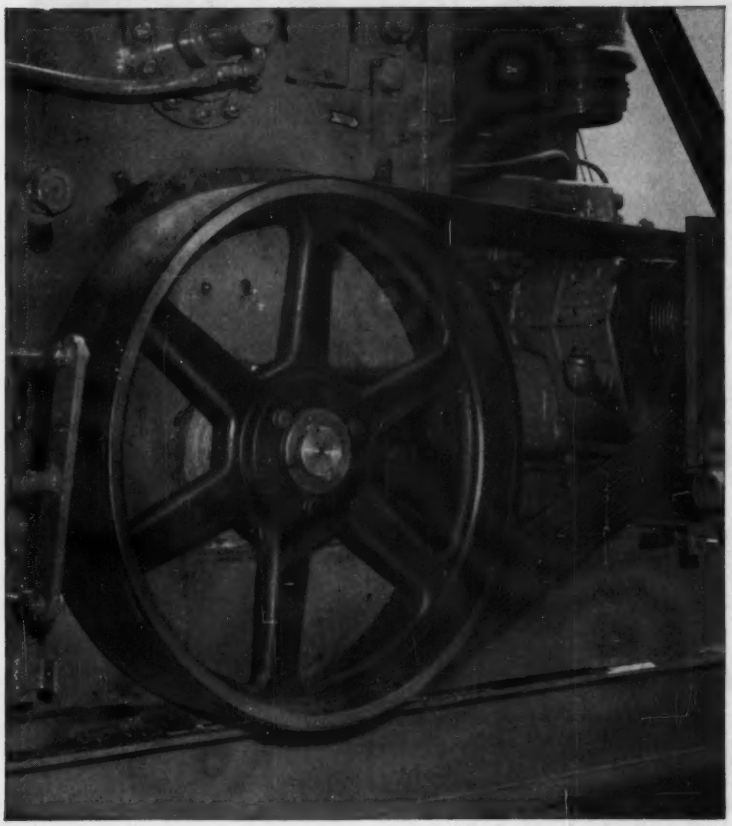
RM

ENGINEERED RUBBER PRODUCTS ..."MORE USE PER DOLLAR"



## RAY-MAN CONVEYOR BELT *Engineered for 45° Idlers*

You can now get up to 60% greater hauling capacity—save up to 20% on conveyor costs—as compared to using regular 20° idlers. Ordinary ply belts are too stiff and boardy to do the job—Ray-Man's exclusive flexible construction and built-in stress compensation is *guaranteed* to take the sharp angle of 45° idlers *without* ply or cover separation at the hinge line. Learn how Ray-Man Conveyor Belt opens up a whole new era of conveyor design . . . permitting larger loads . . . narrower conveyors —assuring longer cover wear, lower handling costs! Write for Bulletin M303.



## CONVERT TO R/M POLY-V® DRIVE FOR MORE POWER IN LESS SPACE... *with Reliability*

- SINGLE UNIT V-RIBBED DESIGN
- ELIMINATES BELT "MATCHING" PROBLEMS
- MAINTAINS GROOVE SHAPE
- CONSTANT PITCH AND SPEED RATIOS
- LESS WEAR ON BELT AND SHEAVES
- COMPLETE CONTACT-PRESSURE

Just two Poly-V belt cross sections meet every heavy duty power transmission requirement.

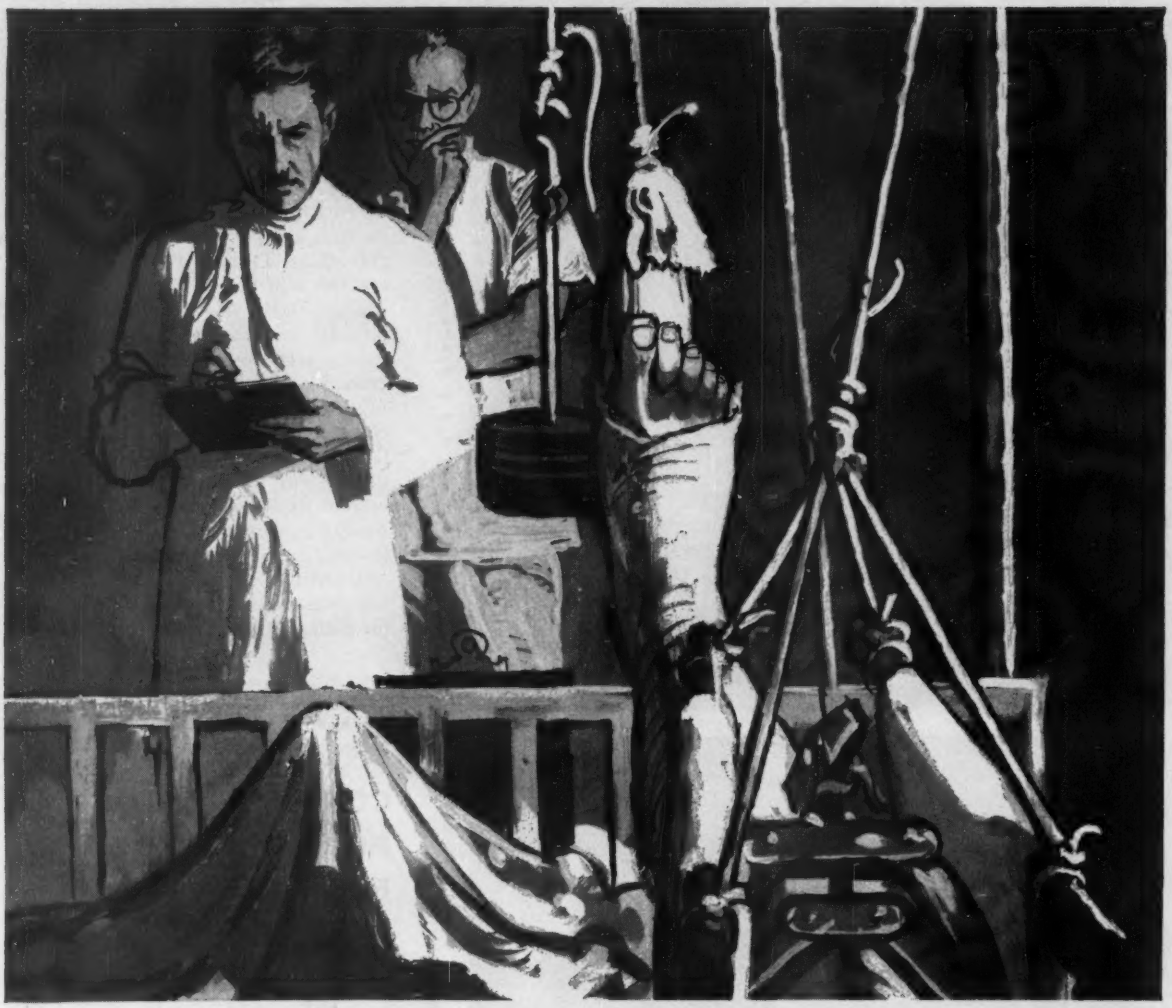
R/M Poly-V* Drive is the smoothest and coolest running —*longest wearing* drive you can install. Discuss your application with an R/M Distributor . . . or write for Poly-V* Drive Bulletin M141.

**Poly-V is patented by Raybestos-Manhattan, Inc.*

*Circle 55 on Reader Service Card*

# PROTECTION IN DEPTH

## How it helps cut compensation costs



## Is clinical diagnosis available to your injured workers?

Safeguarding workers against injury is only half the story of Liberty Mutual's protection in depth. Equally important is the task of lessening the impact of injuries when they do occur. This is why Liberty arranges for the services of leading orthopedic surgeons in 78 cities across the U. S. These specialists are called upon to review diagnoses of serious cases, check their progress and advise attending physicians. Such service helps speed recovery and return to work of injured employees, helps lower workmen's compensation costs for Liberty policyholders.

To learn more about Liberty's protection in depth (which also includes two rehabilitation centers, 400 safety engineers and a fully-staffed research center), just get in touch with the Liberty Mutual office nearest you. Find out the many ways Liberty's protection in depth can help lower *your* business insurance costs.

**Look for more from**

# LIBERTY MUTUAL

**the company that stands by you**

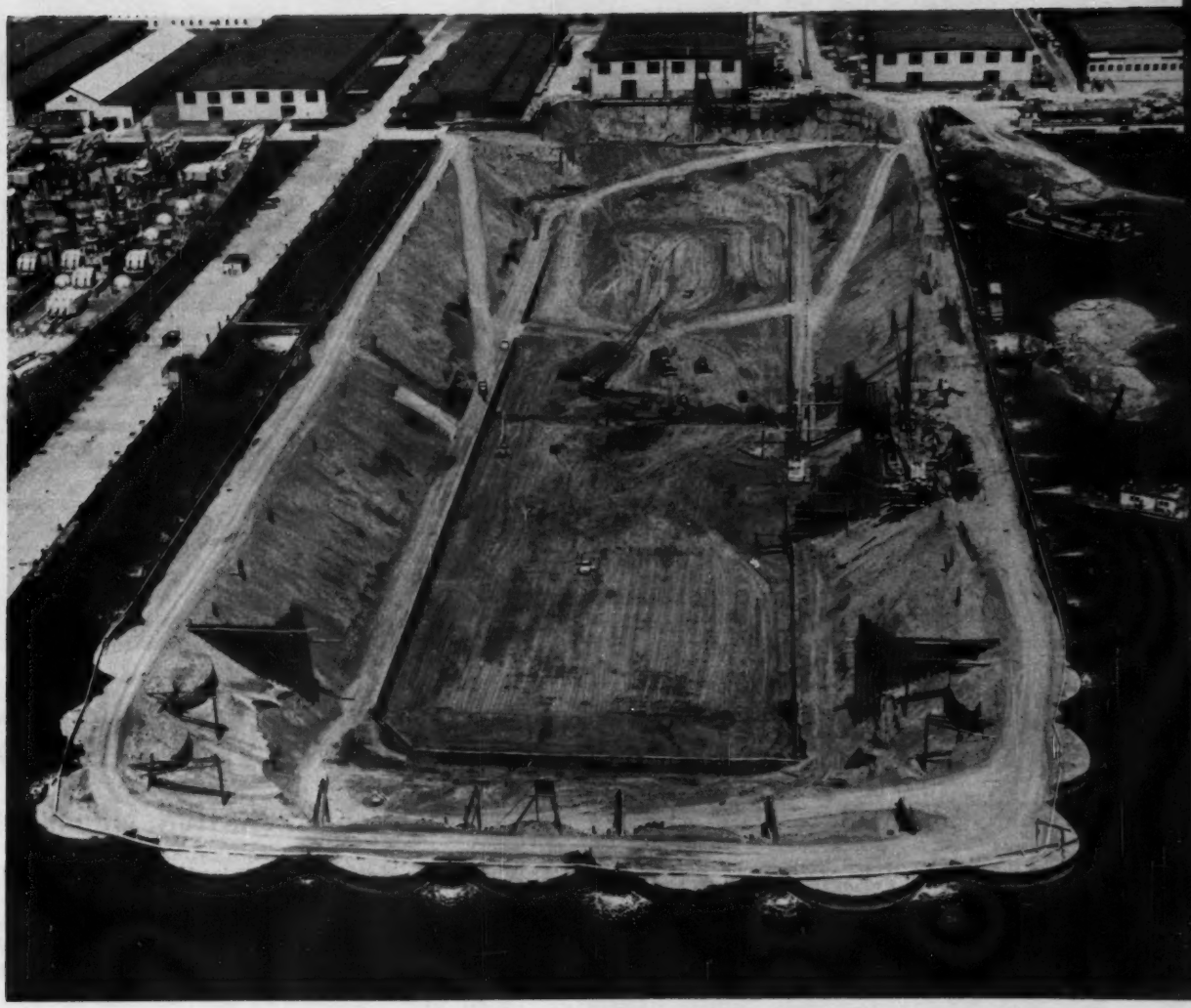
LIBERTY MUTUAL INSURANCE COMPANY • LIBERTY MUTUAL FIRE INSURANCE COMPANY • HOME OFFICE: BOSTON

**Business Insurance:** Workmen's Compensation, Liability, Group Accident and Health, Fire, Inland Marine, Fleet, Crime. **Personal Insurance:** Automobile, Fire, Inland Marine, Burglary, Homeowners

*Circle 56 on Reader Service Card*

# Unusually Long Sheet Piles Surround Deep Cofferdam

PICTURE OF THE MONTH



• The world's largest drydock will be built inside this 250x1,200-ft cofferdam. A joint venture of Manson-Jones-Perini-Osberg is building the drydock in Bremerton, Wash., for the U. S. Navy. Cellular cofferdam walls are made of 100-ft-long MP-101 sheet piling supplied by L. B. Foster Co. Each of the eleven 60-ft dia cells contains about 6,000 cu yd of gravel fill. A system of Moretrench submersible-type deep well pumps plus a perimeter stage of Moretrench wellpoints dewatered the cofferdam to a level 68 ft below mean high tide. The dock's pumpwell area was dewatered to a depth of 86 ft below high tide. Sheet pile wingwalls show the future location of the drydock gate. Concreting of floor started this summer.

4-yard P&H shovel takes only 4 passes to fill 17-yard haulers as it works on production-line basis.

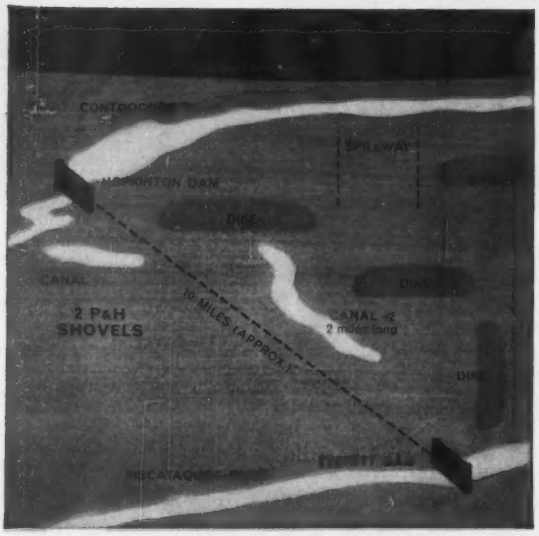
# "We need top yardage...we chose

## ...PERINI CORPORATION, Framingham,

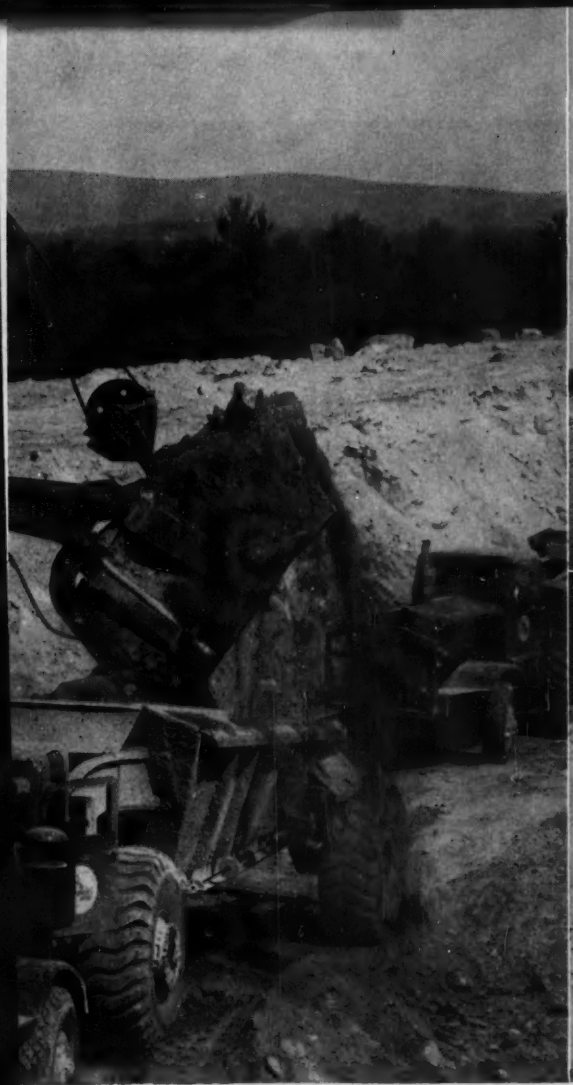
**Warren H. Pettengill, Project Manager, reports—**
*"Our two 4-yard P&H shovels give us faster, smoother work cycles . . . more yardage at the end of the day. This is important on a project that will take 3 years to complete, covers an area of 65 square miles and involves almost 7 million yards of rock, boulders, gravel and earth."*

### 2 P&H Shovels Team Up On Excavation— Keep Haul Units Hustling

Warren Pettengill used his two P&H shovels as a team to handle the excavation on Canal No. 1. He found that both 4-yard P&H shovels maintained a 20-second work cycle . . . and loaded out the 17-yard capacity haul units in 4 passes. Both P&H machines, equipped with Magnetorque Drive for swing and propel, gave him faster and smoother work cycles . . . more precisely controlled starting and stopping for spotting loads over trucks . . . permitted his operators to maintain 20-second work cycles all day long without tiring them out.

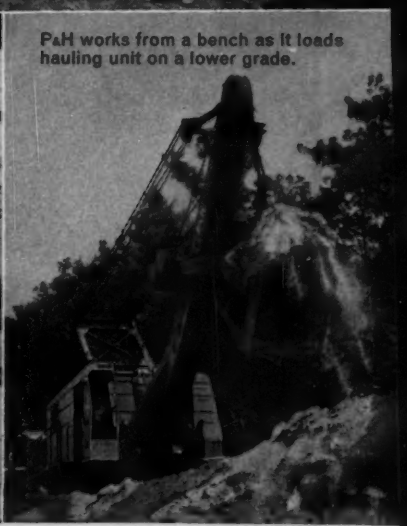



Drawing shows the overall construction area and details the nine separate phases of operation on this project.



Magnetorque-equipped P&H shovel digs boulders and earth as it makes a complete work cycle every 20 seconds.

P&H rapid-reversing chain crowd provides faster shovel retract and ease of operation — means faster, more positive digging.



P&H works from a bench as it loads hauling unit on a lower grade.

# Magnetorque-equipped P&H shovels"

## Massachusetts, $8,000,000 Merrimac River Flood Control Project, Hopkinton, N. H.

### Top Yardage, On-Schedule-Performance Key To Operation

This flood control project involves many phases of operation, each dependent on the other. Roads must be relocated. Excavated material from canals and spillway must be used as fill in the construction of dikes and dams. A slowdown of yardage or a machine breakdown would seriously hamper coordinated scheduling and construction. Perini's P&H rigs have the built-in ruggedness and durability to stay on the job month after month with minimum downtime for servicing.

### P&H Shovels Maneuver Well In Mud

Excavation has been carried out in soft, wet ground that has mired other equipment. The two P&H shovels with single roller crawler assemblies and 36" wide crawler shoes have been able to maneuver without trouble and travel rapidly from one location to another. This is extremely important on this project where continuous production is vital to the overall operation.

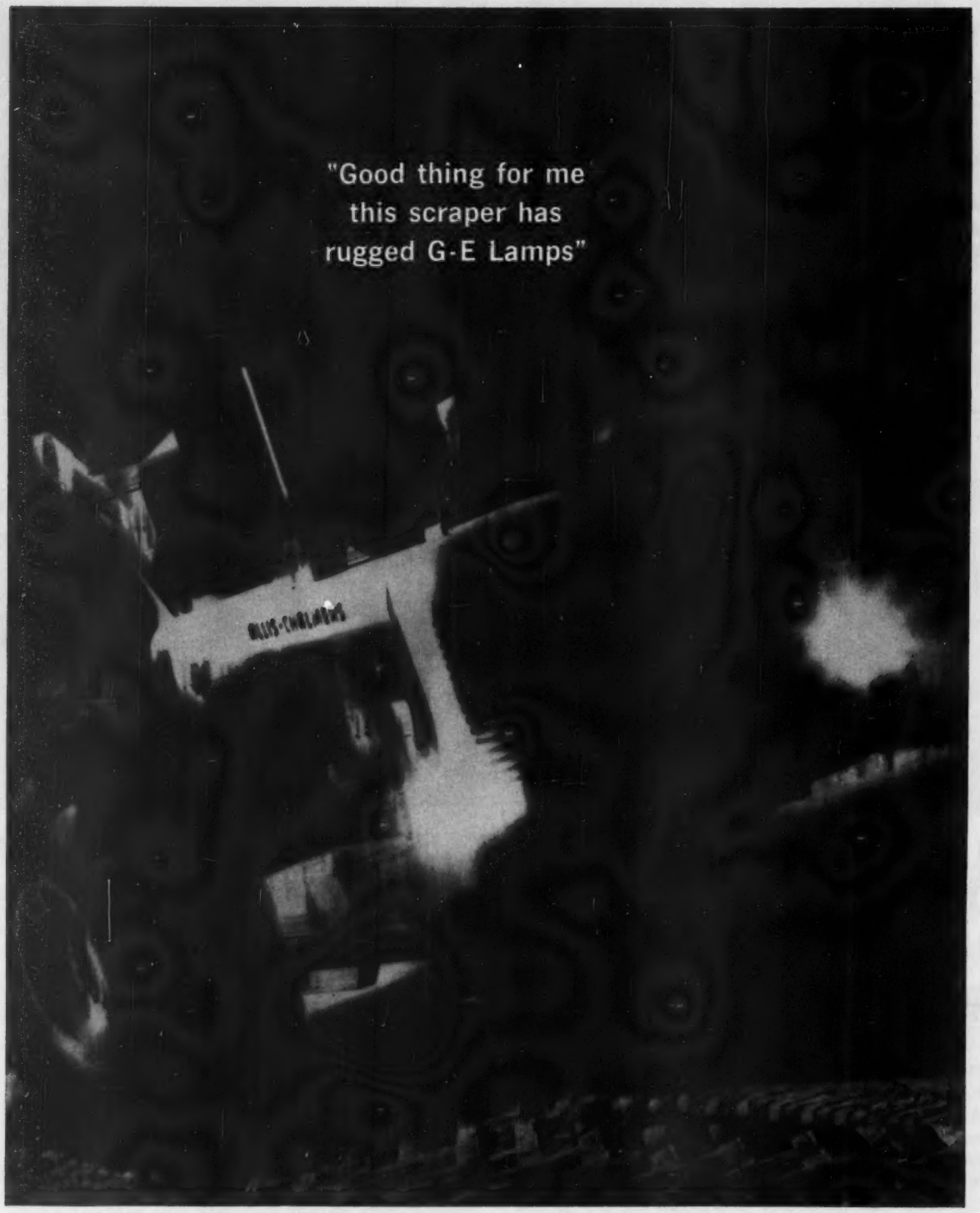
For complete information on this job, write for Case History 130 or contact your P&H dealer for detailed facts on the complete line of P&H power cranes and shovels.

**HARNISCHFEGER**

P&H CONSTRUCTION & MINING DIVISION

*Circle 59 on Reader Service Card*

***Milwaukee 46, Wisconsin***




They're all-glass and won't shatter when spattered. Their special filament construction really withstands shock. General Electric C.I.M. *Floodlamps* light large work areas; C.I.M. *Driving Lamps* give dependable light out ahead of your equipment. And their low beam filament shield is on a separate rod so vibration isn't transmitted to filaments. It's a good thing if *all* your off-the-road equipment has General Electric C.I.M. Lamps. General Electric Co., Minature Lamp Dept. M-040, Nela Park, Cleveland 12, Ohio.

*Progress Is Our Most Important Product*

GENERAL ELECTRIC

*Circle 60 on Reader Service Card*

# Construction News in Pictures . . .

## Awkward Lift

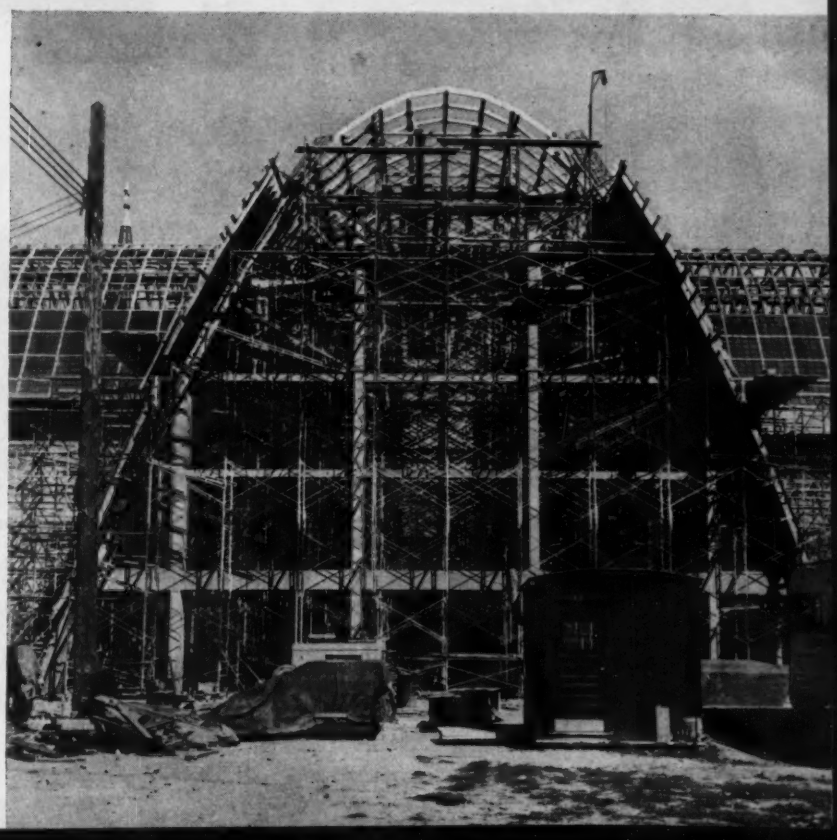
Two gin poles lift into place a 150-ton styrene recovery column at Cosden Petroleum Corp. refinery at Big Spring, Tex. The gin poles are 145 ft tall with 150-ton capacity each. They were made by American Hoist and Derrick Co. Skagit hoist is powered by 250-hp Waukesha engine. Contractor is Badger Mfg. Co. of Cambridge, Mass.

## Self-Erecting Bridge

Main span of pipe bridge over the Rouge River near Detroit is lifted into place with rigging connected to temporary framing on the towers. The bridge will carry three 16-in. gas lines for the Michigan Consolidated Gas Co. Contractor is Whitehead & Kales Co.

## Massive Shoring

The forms for this parabolic arch require a lot of support. Safeway Steel Scaffolds Inc. supplied the shoring to Walter L. Couse & Co., the general contractor for St. Clements Catholic Church. Concrete will be sprayed onto the arches with a True Gun-all model F-2SL unit to a depth of 4¾ in. The completed building will cost $750,000.



## Closing the Gap

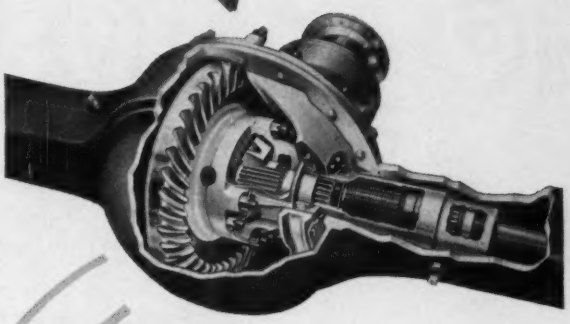
Floating derricks of Bethlehem Steel Co. place the last few girders on Queens approach spans for New York City's Throgs Neck Bridge. The Queens approach has 42 spans, including 18 over water. Girders up to 190 ft long, weighing 130 tons were fabricated and shipped in one piece to the site. The approaches will require 10,500 tons of steel.

## Roof Crane

Paragon Bridge and Steel Co. of Novi, Mich., has the job of building an 80x600-ft extension on top of an existing auto plant in Cleveland without disturbing plant operations. They mounted a 35-ton Lorain Model MC-530W crane superstructure on a special mounting that runs on rails on the roof to erect about 100 tons of steel a day.

## Building a Dragline

Precision control is needed for this lift. A Unit Model 360T truck crane, owned by Oliver M. Elam, Jr., Co. Inc., of Ashland, Ky., lifts into place a gantry top for a new walking dragline being built for Collins Mining Co. of Hanging Rock, Ohio. To handle the 10-ton lift, the truck crane used an 80-ft boom, working at a 36-ft radius.



# Rockwell-Standard® Traction Equalizer... puts action where there's traction!

The Rockwell-Standard Traction Equalizer provides a substantial increase in tractive effort to the wheel with the best road adhesion. It is effective on a vehicle even if one pair of driving wheels has no traction. Provides safer, surer performance on or off the highway . . . easier control on curves, slippery pavement and soft ground. Eliminates tendency of vehicle to swerve when one wheel suddenly loses traction.

**Automatic actuation.** Doesn't depend on driver to start it working. Whenever one wheel tends to turn faster than the other, Traction Equalizer starts to work.

**Tailored to your needs.** With multi-drive axle vehicles, each axle may be equipped with Traction Equalizer units. No matter where your vehicles operate—on or off the highway—the Rockwell-Standard Traction Equalizer gives your vehicles better traction.

**Self lubricating.** Traction Equalizer automatically picks up standard axle lubricant and works it through unit.

**Less maintenance.** Normally, Traction Equalizer requires no maintenance between axle overhaul periods. It also cushions impact of heavy loads on tires, shafts and gears.

*Another Product of...* **ROCKWELL-STANDARD CORPORATION**

Transmission and Axle Division, Detroit 32, Michigan

*Circle 63 on Reader Service Card*

GARDNER-DENVER
Since 1859

SEE YOUR GARDNER-DENVER ROCK DRILL SPECIALIST
BEFORE YOU BID YOUR NEXT JOB

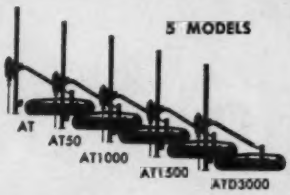
# Only Gardner-Denver matches 30 drill-carrier-feed combinations against any hardrock job

You can plan the blast-hole size and depth, the burden and spacing you need for fastest progress. Your Gardner-Denver rock drill specialist will help tailor your rig to meet these conditions. He chooses from the widest selection of crawlers, drills, feeds and accessories in the field.

### CRAWLER DRILL

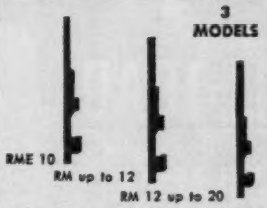
Heavy-duty drill unit for open-pit mining, quarrying and general construction. Uses a broad range of bit sizes with long steel changes.

### "AIR TRAC"®



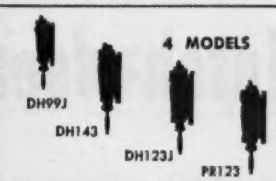

From the basic, low-investment Model AT to the revolutionary swing-boom Model ATD3000 with fully automatic hydraulic power positioning.

### CHAIN FEEDS



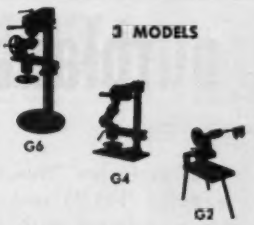

Powered by dependable 5-piston radial air motors with integral gear reducer drives to heavy-duty, rugged feed chains.

### ROCK DRILLS




With 3-position steel rotation, for forward, neutral or reverse direction. News-making PR123 also provides rotation without impact, impact without rotation, or impact with rotation—drills up to 30% faster because it uses all hammer energy directly for percussion.

### BIT GRINDERS




Sharp bits make hole faster and increase drill steel life. Sharpen bits in the field to save time, have the bit when you need it. A model for any size bit.

### DRILL STEEL

HI-LEED* DRILL STEEL
2' to 20' LENGTHS
1¼" AND
1⅛" HEXAGON

Always uncouples with ease. Snug fit of mating parts increases wear life. Firm connections prevent lost rods.

*T.M.

**Complete information in one book.** With this booklet and the help of your Gardner-Denver rock drill specialist, you can select the right rig combination to help your next contract reap bigger profits. For your *free* copy, write for Bulletin CDAT-1.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

# GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

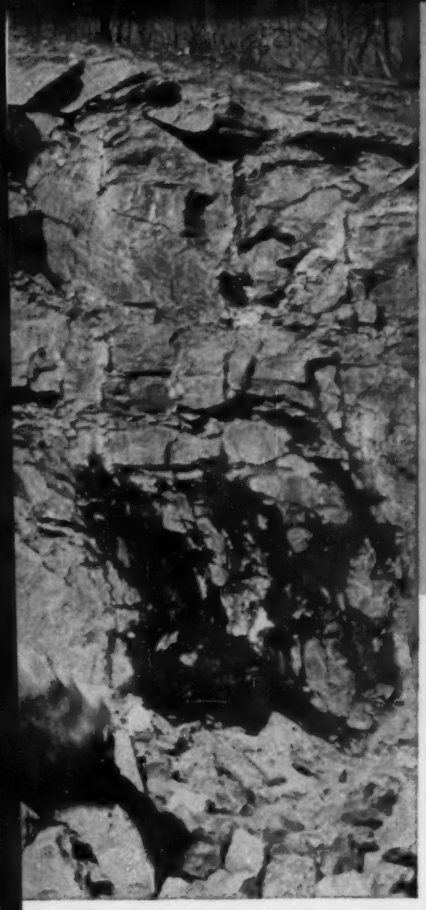
*Circle 65 on Reader Service Card*

# WITH FULL-LOAD PERFORMANCE FULL TIME.....

# Planet Power-steered..Hi-Lo outblade clutch-steered.

**With exclusive "live track" Planet Power-steering,** the International TD-25 makes full-load, full-power turns—or slams straight ahead with offset loads—where giant clutch-steered rigs slip and slue. With exclusive Hi-Lo, on-the-go power-shifting, the "25" gives you instant cut-to-fill matching of power to condition. You roll up big loads—and keep 'em rolling. With exclusive International DT-817 engine wallop the "25" bulls along, 230 turbocharged hp strong—without "slow-motion" lug-downs, even at high altitudes! Prove to yourself the planet-drive "25" clobbers all comers—outpushes or outpulls 'em up to 50% —*and with standard equipment.* Let your International Construction Equipment Distributor demonstrate.

**Dozing volcanic cinders for railroad ballast,** this International TD-25 beats the combined production of two similar-sized clutch steered crawlers on the same job! Reason: Hi-Lo power-shifting gives exclusive 4-speed torque-converter efficiency-range control. The "25" delivers heaped loads every pass! To defy "grinding compound" conditions, the "25" undercarriage has heavy-duty Dura-Rollers.

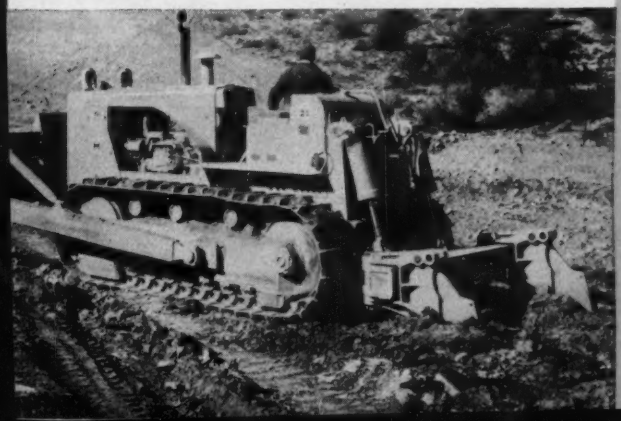


**Even with an enormous offset load of shot rock** there's no "bank-nosing," no sluing. The TD-25 operator simply runs the load-side track in high-speed range—the other in low-speed range. Result: full-capacity, straight-ahead performance—which the "25" also gives on benching, bank-cutting, and side-casting! In the same way, you make full-load turns—because Planet Power steering eliminates "dead-track drag!"

**With Hi-Lo on-the-go power-shifting** you shift down, to dig hard material—shift up, to "run" with the load. And to make full-load turns without spillage, use Planet Power steering: down-shift the turn-side track, and you've got it made! When push-loading with the "25", you maintain solid contact on straight-away or curve—to speed heaping the bowls and get gear-higher "kick-outs"!

# power-shifted "25's" crawlers up to 50%!

**With the same 2-finger ease** as on dozing or push-loading, you steer the TD-25 pulling heaviest drawbar tools. This "25" is deep-ripping "concrete-like" mountain clay that has to be shattered before dozer can move it economically. The "25" has the super undercarriage strength of double-box-beam track frames—for full-capacity performance.



**International® Construction Equipment**

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

# Construction 'Round the World

## In Great Britain

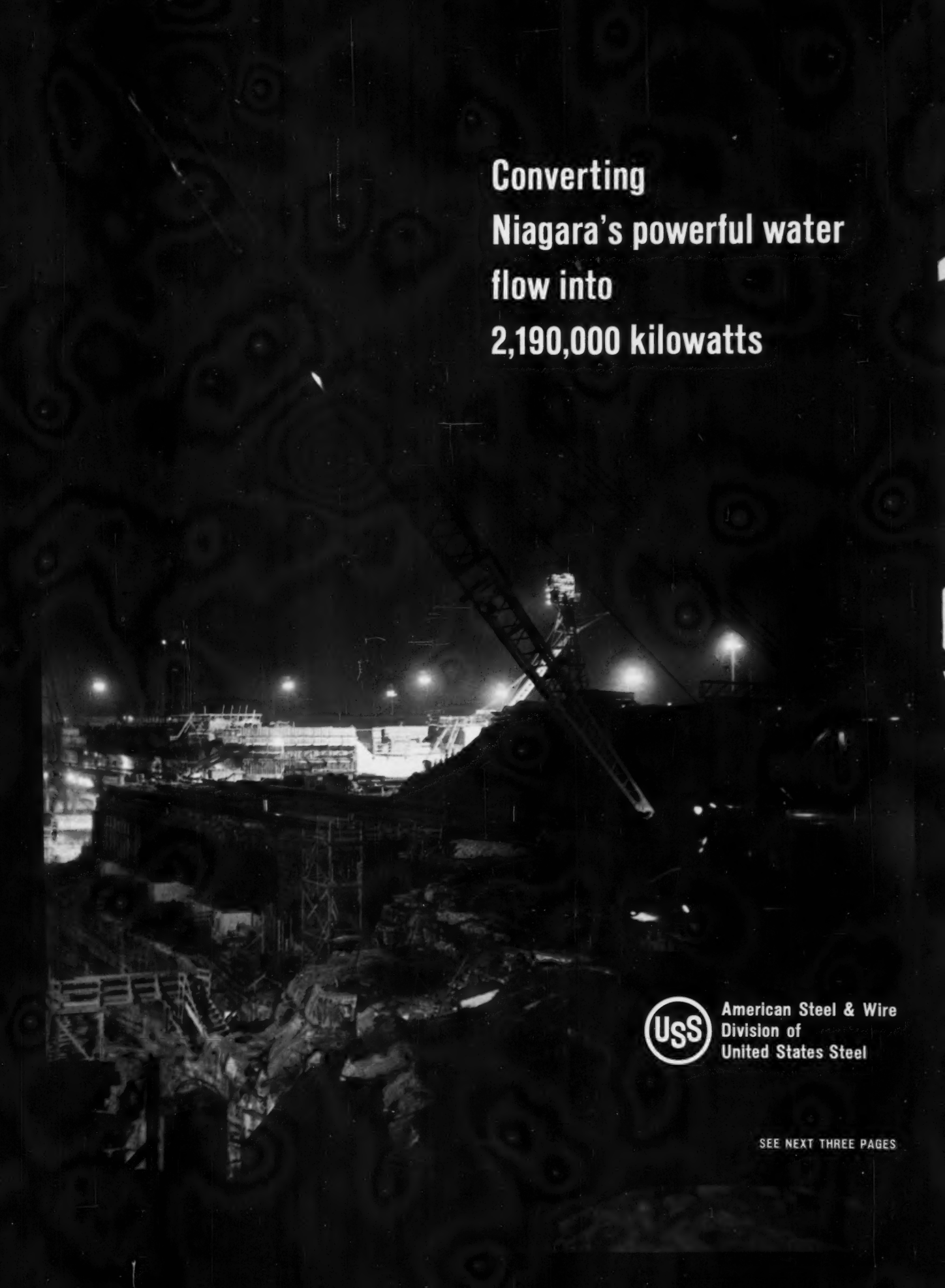
Working in a heavy rock outcropping on the 12½-mi Doncaster bypass expressway, a Ruston-Bucyrus 110 shovel loads a Euclid dump truck. The $14-million bypass is the largest project in the modernization of the Great North Road. Contractors Cubitts Fitzpatrick Shand began to work in June, 1959; expect job to be finished by June, 1961.

## In Japan

An equipment spread prepares the core of Japan's first rockfill dam, Miboro Dam, on the Sho River. A mixture of clay and disintegrated granite is brought to the site by a fleet of Euclid dump trucks. The material is compacted by sheepsfoot rollers drawn by Cat tractors. The entire dam will require 1,040,000 yd of fill. It will be 430 ft high.

## In Canada

Two Dominion crawler cranes, each equipped with 90-ft booms and 20-ft jibs, erect steel for a 225-ft-long deck truss railway bridge at Port Cartier, Quebec. The bridge is one of 17 being erected by Dominion Bridge Co., Ltd., as part of the $200-million iron ore mining venture being undertaken by Quebec Cartier Mining Co. Railway runs 190 mi.


Converting
Niagara's powerful water
flow into
2,190,000 kilowatts
USS
American Steel & Wire
Division of
United States Steel
SEE NEXT THREE PAGES

# Contractors move millions of yards of rock and materials with USS Tiger Brand Wire Rope

Before the first kilowatt of electricity is produced at the new Niagara Falls generating plant of the Power Authority of the State of New York, close to a billion dollars worth of construction will have been completed. At the main plant alone, 10 million cubic yards of rock and overburden were blasted loose and removed. Over a million cubic yards of concrete and 42,000 tons of steel will be placed. Altogether, in the five major projects that make up the job, some 42 million cubic yards of rock and earth will be moved.

**Wire rope does the backbreaking work.** Everywhere you look at Niagara you see USS Tiger Brand Wire Rope hard at work. Big shovels ram into the rock. Revolving cranes are pouring concrete and hoisting heavy turbine parts. Scrapers are scooping up muck to make a huge lake.

On all these jobs, wire rope supplies the connecting link that turns horsepower into profitable work done. One rigging superintendent who has been in construction for 26 years says, "I never cease to be amazed at the strength and capability of wire rope."

**USS Tiger Brand reduces costs.** Where costs are figured in fractions of a cent per cubic yard, every hour of extra service means dollars in the contractor's pocket. On seven revolving cranes rigged with special Tiger Brand Rope, they were getting long service to begin with—then they reversed the ropes and are getting double the life. This is just one case among many, where it paid to buy the best rope. Tiger Brand field service representatives were on the job at all times helping to make proper selections.

*USS and Tiger Brand are registered trademarks*

**Engineering Consultants**—Uhl, Hall and Rich—Boston

**General Contractors:**

Merritt-Chapman & Scott Corporation
Intake structures and dredging; Water conduits, Section I; Niagara Generating Plant

Balf-Savin-Winkelman—Water conduits, Section II

Gull-DeFelice—Water conduits, Section III

**Channel Constructors**—Peter Kiewit, Morrison Knudsen, Perini, Walsh—Tuscarora reservoir, aggregate plant and canal for the fore bay area, Section IV.

**Tuscarora Contractors**—Arundel, Hunkin-Conkey, L. E. Dixon—Tuscarora Pump—Generating Plant.

**Niagara Generating Plant**—Eight giant revolving cranes, rigged entirely with USS Tiger Brand Wire Rope, are busy pouring concrete and handling materials. Extra long service life is being obtained from these ropes. And for preparation of this site, about 9 million yards of rock and overburden were removed with shovels using Tiger Brand.

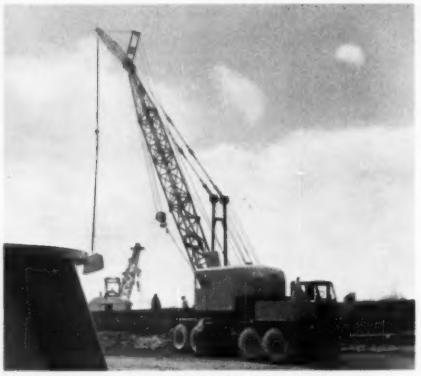
**Tuscarora Pump—Generating Plant**—Pumps water into storage reservoir at night and generates power during the day. Photo shows turbine head cover being placed with USS Tiger Slings from one of the four gantry cranes. Hoist ropes have been in use about a year which is considered real good service.

**Dredging the intake**—Second largest dredge on the lakes with the fastest cycle. Scoops 12 yards. 2″ dia. USS Tiger Brand hoist rope must withstand considerable impact, vibration, corrosion and abrasion.

**Piling rock at aggregate plant**—Largest temporary crushing plant in the world. Produces 2,000 tons per hour. Conveyor booms are rigged with USS Tiger Brand Wire Rope.

**Why USS Tiger Brand is your best buy.** Tiger Brand Wire Rope is designed by one of the industry's most capable staffs of wire rope engineers. It is made by a company that maintains the most complete research and manufacturing facilities in the steel industry. When you buy Tiger Brand you get the right rope for the job. Experienced field service representatives are as close as your telephone. Write American Steel & Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio, for further information, or contact your local USS Tiger Brand distributor.

Pouring concrete with 6x30 special Tiger Brand Rope.



Handling materials with Spin-Resistant rope.

Revolving rigging showing variety of ropes.

# USS Tiger Brand Wire Rope for special uses

The tremendous variety of equipment used at Niagara Falls called for an even greater variety of wire ropes. Tiger Brand field service engineers were on the job to help make selections and offer money-saving tips on how to get the best service.

Jobs were analyzed and every type of wire rope needed was kept in stock for fast delivery. Everything from bulldozer rope to spin-resistant rope was supplied without difficulty. These are a few of the reasons why USS Tiger Brand is your best buy in wire rope. For complete information, call or write American Steel & Wire, Dept. 0395 Cleveland 13, Ohio.

**American Steel & Wire**
**Division of**
**United States Steel**

Columbia-Geneva Steel—San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron—Fairfield, Alabama, Southern Distributors
United States Steel Export Company, Distributors Abroad

Steel

This mark tells you a product is made of modern, dependable Steel.

# 3-SPEED

## cuts loader shifting slow-downs

Cut loader shifting slow-downs and you're bound to speed loader job-cycles.

And no loader transmission cuts shifting slow-downs like "Time-Study" TORQMATIC. Reason? It needs only 3 speeds where other hydraulic transmissions need 4 . . . naturally, TORQMATIC-equipped loaders crowd, dig, load and travel faster.

That's just one reason why 9 out of 10 leading loader manufacturers use "Time-Study" TORQMATIC.

More? This single-unit converter-transmission team has fewer hoses to plug, leak or crack . . . has clutches up to twice the diameter of those used in other hydraulic transmissions *. . . is designed to need no major service for two engine overhauls.*

What's more, it's easier and cheaper to repair and maintain. Gears can be replaced in about 4 steps where other hydraulic transmissions need over 20.

It's easy to see why more and more loaders are carrying the TORQMATIC label – why more and more loader buyers are talking TORQMATIC. Want to know more? See your loader dealer or write Allison today.

**Allison Division of General Motors**
Indianapolis 6, Indiana
In Canada: General Motors Diesel Ltd., London, Ontario

Allison TORQMATIC

**TORQMATIC® DRIVES**

*THE MODERN DRIVE FOR MODERN LOADERS*

*Circle 73 on Reader Service Card*

*Michigan rubber-tired dozer prevents job shutdown*

# Haul trucks bogged down until Model 280 arrives to spread fill and compact in one operation

Push-loading a fleet of five 15 yd scrapers, the Model 280 boils 'em over in only 45 seconds.

When a Michigan Model 280 rubber-tired Tractor Dozer was put to work on the Rieth-Riley Construction Co job near South Bend, Indiana, filling and compacting problems—which threatened to close the job—were solved.

It was early spring. This Goshen, Ind, firm was working on a $1,000,000 contract, building part of a new four-lane divided highway to bypass South Bend. Yardage totalled 644,000 cu yds, mostly clayey sand. Trouble started when pockets of wet glacial clay were encountered at the borrow pit. Then it snowed and the material became even more unstable. The dozen 10 yd trucks hauling onto the fill were continually bogging down. A 10-ton, 3-wheel roller couldn't compact fast enough and a pair of 200 hp crawlers couldn't spread fill and pull out trucks too. The job was near a standstill.

At this point, Grade Foreman Truman "Cannonball" Condra thought it might be a "good idea" to try a mobile high-speed Michigan Tractor Dozer. Michigan Distributor, Deeds Equipment Co, brought out a 262 hp Model 280.

### Michigan performs dual role

Half a day's work with the Model 280 unsnarled the tangle. The key was speed. The fast rubber-tired rig could assist trucks when they bogged down and still have time to spread material across the length and 250 ft width of the fill.

### Compaction: 95% in normal dozing

Later, an even more amazing thing began to happen. As the day wore on, trucks no longer became mired in the unstable material. The Model 280 with its big hydroflated 29.5 x 29 wide-base tires and working weight of 56,000 lbs, was compacting fill so well the trucks could get through. Moreover, in the *normal course* of its dozing job, required compaction was being attained by the Michigan alone . . . compaction which equalled the state specification of 95 to 100% Proctor.

### Handles fill work too

So, trucks got through and the job was kept open. The Michigan Model 280 handled the spreading of fill and compaction for 12 trucks—3,000 pay yds per 10 hr day. The two crawlers were put on standby. Track costs, a major problem in the sandy material, were eliminated. The roller was retired.

Spreading scraper-dumped fill 500' takes the Michigan only 45 seconds. Return, in fast reverse, takes 25 seconds.

### Production jobs all over the grade

In later weeks, as weather and soil conditions improved, the Michigan's versatility, power and speed paid off even more, both on additional production jobs and odd jobs. On construction of the main interchange, for instance (a fill 47 ft deep with grades up to 2 to 1), the 262 hp Model 280 dozed 5,000 pay yards per 10 hour day, per cross-section measurement. On push-loading assignment—working with five 15 yd scrapers, the Model 280 loaded each to spill-over in only 45 seconds. Spreading scraper-dumped material also took an average of 45 seconds over a distance of 400 ft. With up to 28 mph reverse, back-up "dead head" time here usually amounted to less than 30 seconds.

### "Right there" for emergencies

The Michigan's 28 mph speed permitted runs from one end of the two mile job to the other for handling such emergencies as starting stalled equipment, pushing loaded scrapers over hills and pulling out bogged-down trucks. It came in handy when repair work was called for. The high blade lift made it possible to "pull out" engines and power-train components for repair, making it unnecessary to call in an A-frame truck. The Michigan also back-filled drainage structures . . . in less than two hours overtime it could complete 10 or 12, each structure taking only 10 to 15 minutes.

In summary, the Model 280 did production work wherever used . . dozing, shaping, rough grading, compacting, push-loading. It needed no planks when traveling over railroad tracks or concrete and it could quickly run around to handle emergency situations. When the bulk of earthmoving was completed, the Model 280 was kept on to complete the finished grading before paving began.

Grade Foreman Condra put it this way, "I won't say our Michigan will do everything, but I am convinced we can't get along without it." Maybe *you* "shouldn't get along without a Michigan Tractor Dozer" either. Why not call us for an on-the-job demonstration. Choose from any one of four sizes—162, 262, 375, and 600 hp. No obligation.

Michigan is a registered trademark of

**CLARK EQUIPMENT COMPANY**

**Construction Machinery Division**

CLARK EQUIPMENT

2403 Pipestone Road
Benton Harbor 18, Michigan
In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

*Circle 75 on Reader Service Card*

# Huge job ($750,000,000)

## *Michigans do so well handling rock, contractors (Merritt-Chapman-Scott, Gull-DeFelice, Balf-Savin-Winkelman) have eight at work, six more on order*

You are looking at one of the biggest construction jobs in the world today: the $750 million Niagara Power Project. The construction firms are Merritt-Chapman & Scott and two joint venturers, Balf-Savin-Winkelman and Gull-DeFelice. Their present work: two four-mile-long conduits from above Niagara Falls to a reservoir and 1,950,000 kw generating plant below the Falls. A tremendous task! Over 16,500,000 cubic yards of excavation, mostly through Lockport dolomite. Cuts 46 ft wide, 64 to 120 ft deep. Total bid price of $136 million. A fantastic variety of work conditions, as evidenced by the wide range of per-yard bid prices: from 30 cents *to more than $45 a yard!* And almost all the specialized rock loading handled by Tractor Shovels. Eight of them when these pictures were taken—*all 17,000 lb lift capacity Model 175A Michigans.*

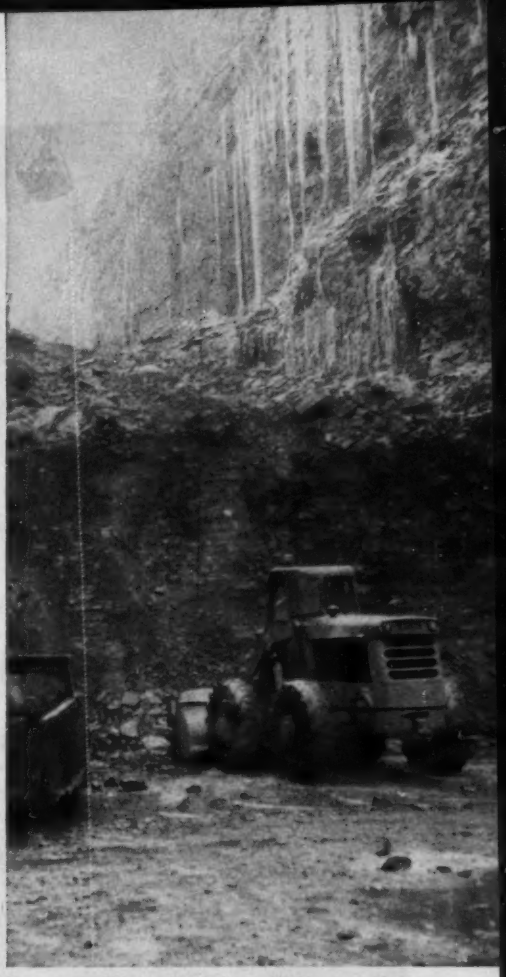
As on most big contracts, the first few Michigans were brought here to do scattered loading. The only difference was that almost all the material was rock . . . yet the Michigans did so well that when emergencies occurred they were *tried in production areas.* Here too, they did the job, moving substantial yardage at low cost! Soon more and more Michigans were brought in, and more jobs assigned to them.

### Load rock into skip pans

Today a typical Michigan assignment consists of loading newly-shot dolomite from the deeper cuts into excavator-handled skip pans. One Model 175A, lowered into the cut by the huge dragline it then served, was timed loading the 2700 lb/yd broken material at the rate of 11 yds every 4 minutes . . . including time to back away from the

Typical conduit-area rock assignment for Merritt-Chapman-Scotts' Michigans: moving newly-shot dolomite into spoil pile. Same rig later will load this 2700 lb/yd material into skip pans or haul units.

Typical surface-level Michigan job: truck-loading rock from spoil pile. Because work is so scattered, unit is not equipped with rock tires or rock bucket, yet it usually needs only 4 minutes to heap 18 yd truck.



Here, a Balf-Savin-Winkelman Michigan works at bottom of conduit cut. Machine carries shot rock, dozed over bank by tractor, from toe to skip pan. Production: 11 cubic yards every 4 minutes.

# . . . unusual rock-loaders

toe, turn, and travel 50 to 100 ft to the skip pan.

### Take over normal hand-labor task: cleaning rock floors

Another common Michigan job is "sweeping" the rock-cut floors—making them, as one contractor says, "as clean as your kitchen table" before concrete is poured. Here, the Model 175A's load out the last foot or two of shot rock. Material is collected into spoil piles for later truck loading, heaped into skip pans, or loaded direct into hauling units. "Michigans sure take the work out of this job," say the operators. "You get a full bucket, 2¾ yds, without trouble—or you can pick up a single stone lying flush against the wall. Ability to *feel* the bucket tilt and lift, plus the quick backup possible through power-shift transmission, keeps machines and buckets from being damaged by hidden rock shelves."

### Mobility pays off in supply delivery, pipe-laying

The Michigan Tractor Shovels still handle a wide variety of scattered lifting, dozing, and carrying tasks outside of the conduits. A machine assigned surface work may drive *50 miles or more* in a day. Rubber-tired 27 mph mobility helps substantially here in reducing the waste time normally associated with between-job moves.

Typical of the hauling jobs done by the Model 175A's is handling supplies and equipment arriving on the job by truck. Ten to 30 inch concrete pipe, for example, is chained to the bucket, carried up to 200 feet, and placed in trenches by a Michigan. Later, the same machine returns to backfill, using its bucket both to carry material and as a dozer to blade it.

*Circle 77 on Reader Service Card*

### In 9 months, 3600 work hours

Two of the three contractors are thus using their Michigans two 10-hour shifts a day. Indicative of their operating hours are engine hour-meter readings taken at random. One machine, for instance, delivered nine months before these pictures were taken, registered 3,679 hours. The other, six months on the job, had rolled up 2,409 hours.

Is it any wonder, with performance like this, that all eight Tractor Shovels on this big job are Michigans? Or that six more Tractor Shovels are on order . . . these too, all Michigans?

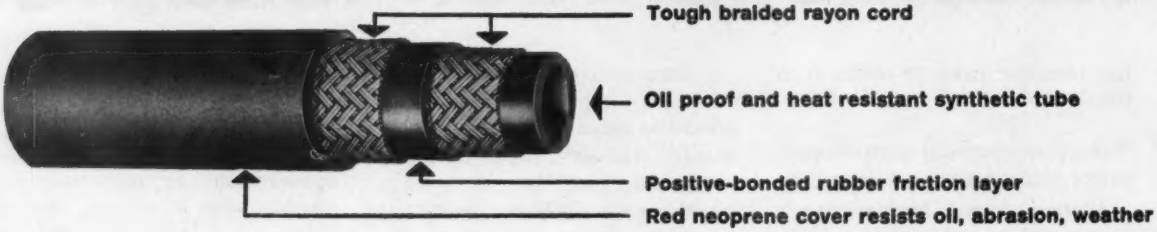
Michigan is a registered trademark of
**CLARK EQUIPMENT COMPANY**
**Construction Machinery Division**

CLARK EQUIPMENT

2403 Pipestone Road
Benton Harbor 41, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

# The hose that wears like a truck tire!


Tough braided rayon cord
Oil proof and heat resistant synthetic tube
Positive-bonded rubber friction layer
Red neoprene cover resists oil, abrasion, weather

Work like this is rough on hose, but Thermoid-Quaker "Versicon" takes it in stride. "Versicon" hose is built for high air pressures, up to 300 psi. It's built to withstand dragging over jagged, abrasive rock. It resists oil, baking sun or freezing cold. It's the heavy gauge, tough neoprene cover that takes this kind of surface abuse.

The tough braided rayon reinforcement gives it the extra strength to withstand high working pressures.

The tube is a specially compounded synthetic that's oil proof, heat resistant and will not flake or chip.

"Versicon" is made in all sizes up to 1½" and in lengths up to 500′ in some sizes. Also in one, two or three braid constructions for use with water, oil, grease, solvents, sprays and mild chemical solutions.

See your experienced Thermoid Division Distributor for the right hose for your requirements, or write: *Thermoid Division, H. K. Porter Company, Inc., 200 Whitehead Road, Trenton 6, N. J.*

**THERMOID DIVISION** PORTER **H.K.PORTER COMPANY, INC.**

**PORTER SERVES INDUSTRY** with steel, rubber and friction products, asbestos textiles, high voltage electrical equipment, electrical wire and cable, wiring systems, motors, fans, blowers, specialty alloys, paints, refractories, tools, forgings and pipe fittings, roll formings and stampings, wire rope and strand.

*Circle 78 on Reader Service Card*

Construction Methods AND EQUIPMENT

NOVEMBER, 1960

VOLUME 42 • NUMBER 11

HENRY T. PEREZ, Editor

# The Contractor vs. the Public

"THE PUBLIC BE DAMNED" attitude of construction companies and contractor personnel from one end of the country to the other is a disgrace. And this attitude does nothing, to say the least, to help the prestige of an industry already making headlines because its members are being charged with such things as bribery, kickbacks, and pricefixing.

This contempt for public opinion is stupid. And there is no reason for it. There is no reason for carelessly maintained and poorly marked detours, for streets littered with spillage from trucks, for setting off blasts without informing nearby residents, for trenches left open inordinately long, for incompetent and surly flagmen, for blocked sidewalks and streets, or for a host of other needless practices that infuriate the public.

Now the public is beginning to do something about the situation. New York City, to cite but one example, has just passed a law to penalize contractors who block roadways or streets. The penalty: up to $100 fine or ten days in jail for each day of violation, plus a civil $100-per-day penalty.

The city means to enforce its new law. And other governing bodies around the country are considering or enacting similar curbs with even stiffer penalties. Unless contractors police themselves, certainly it will be done for them.

Admittedly, many of the contractor's operations that anger the public can not, economically, be changed. But much criticism of them can be forestalled by an intelligent public relations program.

A case in point is a large sewer job in the Portland, Ore. area. Here, contractor Lee Hoffman, Inc., distributed an attractive and informative brochure to residents who might be affected by his operations. Included is a map showing just where trunks, mains, and laterals are to be laid.

The brochure describes what construction work is to be done, and tells how it will be prosecuted. It asks residents "to put forth the small amount of effort and above all, patience, which a successful community project requires." It also frankly states that some inconveniences can not be avoided. But it goes on to point out how the homeowner himself can minimize these inconveniences. And, to help the resident plan ahead, the contractor publishes in the local paper a list of streets on which he will be working during the following week.

Informing the public as Hoffman has done is not only good public relations but a smart business move. The modest cost of the brochure will more than be made up by saving company personnel from having to answer individual complaints or requests for information. And, if there were more contractors who paid more attention to their real customers—the public—there would be less need for legal penalties such as New York's.

# Hydraulic Hammers Perforate Pavement With Rapid Blows

*To strip asphalt-covered concrete pavement from a 3,215-ft-long bridge, this contractor put two hydraulic hammers to work on the deck. Fitted with special steel punchers, they puncture 11½-in.-thick pavement, often with a single blow, to cut out as many as 46 6x9-ft blocks a day.*

TWO HYDRAULIC HAMMERS fitted with specially-fabricated steel punchers enable an Ohio contractor to strip pavement from a suspension bridge in a neat and economical way The hammers cut out 6x9-ft blocks of 11½-in.-thick pavement. Then, after the rebars are cut, the blocks are hoisted by a crane, dumped into a truck, and carted away.

Before deciding on the hydraulic hammers, the contractor, Lathrop Co. of Toledo, investigated several different methods for removing the pavement. They ruled out saws because it was impossible to determine just how long the blades would last. From the best estimates available, Lathrop figured the pavement would chew up about $80,000 worth of blades.

Lathrop planned to handle the project with 18 air compressors and pavement breakers that would have required a crew of 36 men. In fact, the firm bid the job on that basis. But on the day work started, an on-the-job demonstration of an Ottawa Commando Hydra-Hammer proved so effective that Lathrop decided to buy two of them right away.

Lathrop's $1,200,000 contract calls for repairing and widening Toledo's Anthony Wayne Bridge, a 66-ft wide structure that is 3,215 ft long from abutment to abutment, with a 1,252-ft-long suspended section. Lathrop has to remove 9 in. of reinforced concrete covered by 2½ in. of asphalt paving on a 54-ft-wide, 4-lane roadway, plus 6-ft-wide reinforced concrete sidewalks at either side. The contractor is required to maintain traffic while pouring the new roadway, and must prevent pieces of the old pavement from falling into the street below.

"The part that worried us most was the removal of the old pavement," says Gerald Heffelbower, Lathrop vice president and general superintendent. "Our goal was to get the pavement out with as little mess as possible and in the biggest possible pieces."

**CUTTING OUT** — Two Hydra-Hammers, each with a 14,500-lb impact, cut out 6x9-ft blocks on the suspension bridge deck. One makes transverse, the other longitudinal, cuts.

The contractor started by cutting out 7x9-ft sections for removal. Later, they reduced this to 6x9 because the smaller size could be handled more easily by the trucks.

During the first day of operation, a combination asphalt and concrete cutting tool was fitted on the Hydra-Hammers. But this tool resulted in an excessive amount of old concrete breaking away on the underside of the bridge. Ottawa engineers visited the job, then came up with a special steel pick-like tool that is 3 in. sq at the top and tapers to 2 in. sq at the bottom. It is 15 in. long, with the cutting end sharpened to a 90 deg chisel point. With this tool, the hammers—which pack a 14,500-lb impact—cut cleanly through the 11½ in. of asphalt and concrete, often with a single blow.

**PICK-LIKE TOOL**—Ottawa engineers designed this tapering tool with a 90-deg chisel point to cut through 9 in. of reinforced concrete and 2½-in. of asphalt.

**OVERALL VIEW**—As two hydraulic hammers proceed up the deck, a crew follows to sever rebars. Then a truck crane lifts up the blocks and drops them into a truck.

**RAPID BLOWS**—After making holes 2-ft apart on the perimeter of a 6x9 block, the hammer knocks out concrete between these holes with rapid succession of punches.

Through experimenting, Lathrop learned that the best method is to punch two holes about 2-ft apart on the perimeter of a 6x9-ft block. Then the hammer easily knocks out the concrete between the holes with rapid strokes. This system results in a thin cut a few inches wide around the perimeter of each block.

With two Ottawa's working, Lathrop sets up the sequence so that one rig makes transverse cuts while the other makes longitudinal cuts. Cutting is expedited by the hammer's hydraulically controlled tower that can move in any direction while the rig, itself, stands still.

With this procedure, the two hammers cut out an average of 28 sections per 8-hr shift during the first 30 days. As the operators became acquainted with the machine, they cut out as many as 46 sections a shift.

A crew with cutters and a pavement breaker follows behind the hammers to slice reinforcing rods and chip concrete from the steel girders. This same crew attaches slings to one 6x9 block at a time. The hoist line of a ¾-ton Lorain crane hooks onto the sling, raises the block, and loads it into one of two trucks on the job. The trucks transport the old pavement 3½ mi away to a disposal site.

Where the bridge passes over heavily traveled areas, Lathrop installs prefabricated 4x5-ft wood panels between the lower flanges of the deck girders to catch falling debris. These panels, or catch boards, have 3-in.-wide hinged strips at either side to facilitate installation and removal. Lathrop places the catch boards from a scaffold that is supported by cables strung under the bridge especially for this purpose.

Guards are stationed under the bridge where planks are not placed. One guard patrols the Maumee River in a small power boat; he keeps contact via two-way radio with the job on the bridge. When freighters or other large craft have to pass underneath, the guard radios the bridge

**HOISTING**—A Lorain ¾-ton truck crane lifts out a block from the bridge deck. The compressor alongside it powers breakers that clean concrete from the deck girders.

**PAVING**—Another Lorain truck crane works with a concrete bucket during the repaving operation. Concrete blocks atop girder help to maintain the structure's balance.

and work stops until the vessel has passed safely underneath.

To maintain traffic, Lathrop is working the bridge on the northern side first, leaving two southern lanes and the sidewalk open to traffic. Pavement is stripped from the sidewalk and one traffic lane on the northern side while equipment works from the remaining traffic lane. When the first traffic lane is repaved, equipment will move on it to remove pavement from the other lane. The same procedure will be repeated on the southern side of the bridge.

While concrete is being stripped from the suspended section of the bridge, care has to be taken to maintain the structuré's balance. To do this, Lathrop removes and replaces pavement in 180-ft-long sections. As an extra precaution, concrete blocks are placed on the bridge girder alongside the section being repaved. Each of these counterweight units weighs 750 lb. By using them, Lathrop retains 70% of the weight of the material being removed.

Specially fabricated Granco corrugated forms that remain permanently in place are used for the paving operation. Transit-mix concrete is placed by a ¾-ton Lorain crane that alternates between two buckets. While one bucket is being filled, the other is hoisted away to the pour area. With this method, Lathrop pours 40 lineal ft of roadway in 1 hr. The new pavement is 8 in. thick, reinforced with ¾-in. rods.

Lathrop began work on Aug. 3 and expects to have the northern lanes completed before winter sets in. Then they will shut down until spring, when work will resume on the southern half of the bridge. The project is scheduled for completion by October, 1961.

Harry Zahn is job foreman for Lathrop.

# Variety of Machines Battle Swampy Ground

*Switching from lane to lane and placing the fill in short stretches, a contractor is completing a section of Interstate 81 that runs on a nearly continuous 5½-mi fill. It crosses a swampy area where scrapers cannot get enough traction for spreading on the run. So the fill is placed to a 2-ft height and its toe is advanced a few feet at a time.*

SWAMPY TERRAIN on an Interstate highway project in New York State requires the handling and rehandling of more than 1½ million yd of dirt. Most of this is borrow, because the road runs on a 4-ft-high fill for 5½ mi. The $4-million job is part of Interstate Route 81 south of Watertown.

Some of the dirt to be moved is peat and muck skimmed off the top of the ground. A lot of it is fill hauled in from six borrow pits. About 200,000 yd of it is selected borrow for areas that are extremely wet and troublesome. And nearly 20,000 yd is processed material for use around bridges and grade separation structures.

The soggy ground hampers earthmoving because scrapers cannot get enough traction to spread their loads on the run. Instead, the contractor builds the embankment to a height of about 2 ft, pushing the toe of the fill ahead a few feet at a time. Additional dirt and fine grading follow later.

Drainage is a factor also. But the contractor, Arute Bros., Inc., of New Britain, Conn., makes no provision for drainage while the fill is being placed. They're using the fill as a haul road and utilizing the weight of the scrapers to provide compaction.

But interrupting the natural drainage for a long time would turn the entire area into a swamp. So the contractor is switching back and forth from one roadway to the other as the fill takes shape. They're trying to keep as many machines as possible busy at all times and are working almost everywhere at once. Here's the sequence they follow:

***continued on next page***

**IT'S ALL BORROW**—Dozers push-load scrapers in one of six borrow pits on the job. A ridge nearby supplies most of the material.

## Scrapers Haul in the Dirt, Dozers Place It

**STANDING STILL**—Euclid S-18 can't move on wet soil; ejects its load while stationary.

**SPREADING**—Cat D8 dozer pushes the dirt onto wet ground after the scraper leaves.

First, Cat D9 dozers skim off the soggy organic material and mud. They leave it in piles or windrows along the fill, and trucks haul it away and dump it into borrow pits when the fill is completed.

Next, scrapers and dozers start near a borrow pit and build the embankment for one of the roadways. There are six borrow pits on the job.

Next, a clamshell and tractor shovels install corrugated pipe culverts in the completed fill. At the same time scrapers are placing dirt for the embankment to carry the opposite roadway.

Then the tractor shovels install pipe culverts in the second roadway. The same procedure is repeated when the equipment moves to a new borrow pit and starts a new stretch of the fill.

Finally, scrapers, haul in additional dirt and spread it on the run. Graders smooth it out to the required grade, and a tractor-drawn pneumatic-tired roller takes care of final compaction.

### Placing the Fill

As soon as the D9's have skimmed off the unusable material, the scrapers start placing the fill. They start near a borrow pit and extend the fill a few feet at a time. The exposed sand on which the fill is placed is solid enough to support the scrapers, but it's too slippery to provide good traction.

To beat the traction problem, the scrapers don't travel on the original ground. Instead, they move on the fill and eject their loads while standing still at the end of the completed portion of the embankment. After every two or three loads, one of the D9's, standing by on the fill, comes in and pushes the dirt onto the bare, slippery sand ahead of the compacted fill. It also rough-grades the material and keeps it in shape so scrapers can use it as a haul road.

Each embankment is 36 ft wide and will carry a 24-ft-wide asphaltic concrete roadway. The bank slopes are 1 on 4.

Once a portion of the fill for one of the roadways is completed, Arute's crews come back in to install corrugated pipe culverts. One clamshell, on a P&H truck crane, and tractor shovels handle this operation.

The clamshell excavates trenches across the fill for Armco pipe culverts. It also digs ditches through the muck on either side of the fills and improves drainage channels near the right-of-way. Then a tractor shovel places the corrugated pipe and backfills the embankment.

### Job-Built Lifting Attachment

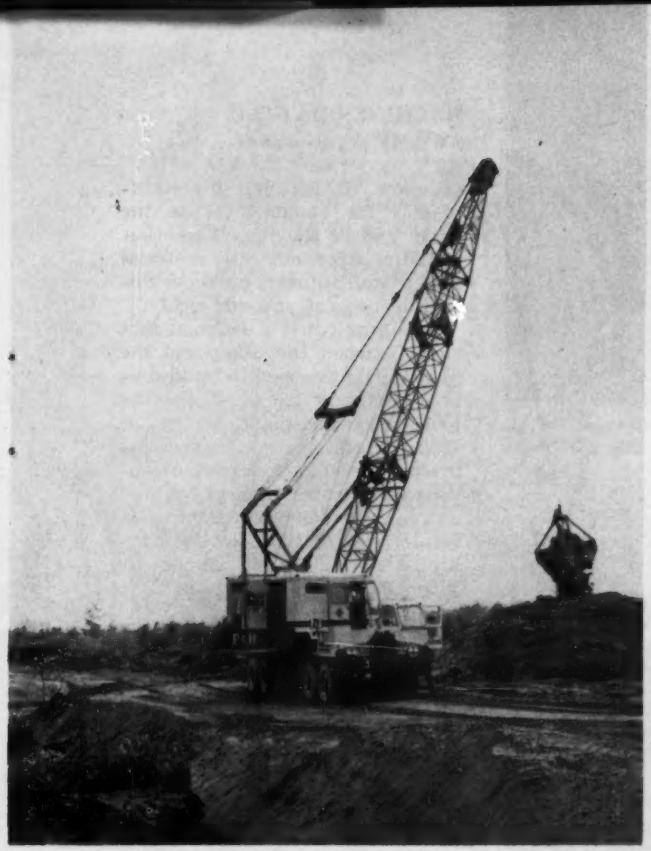
Two sections of pipe, each complete with a flared metal section at one end, make up a culvert. The pipe is too heavy to be moved by hand and hardly heavy enough to warrant the use of a crane. For this and similar applications, Arute's mechanics designed a boom attachment to fit a tractor shovel.

The attachment was built right on the job and was installed on a Michigan 175A tractor shovel. It can load and unload materials, install pipe, position concrete forms, and take care of miscellaneous other lifting tasks. Maximum height of the end of the boom is about 23 ft.

It's a simple gadget. Basic component is a steel pipe about 16 ft long. One end is capped, and a short steel bar is welded to the center of the cap. When attaching the boom to the tractor shovel, the bar is inserted into a small hole in the back of the bucket with the pipe cap resting against the inside of the bucket.

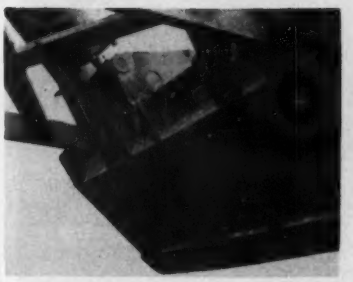
At the other end of the pipe

# Tractor Shovel with Job-Built Boom Places Pipe



**DITCH DIGGER**—Clamshell on a P&H truck crane excavates ditches for culverts.

**LIFTING ATTACHMENT**—A 16-ft-long section of steel pipe is attached to the tractor shovel bucket to handle lifting jobs.



**BOOM INSTALLATION**—Small rod welded to end of the pipe boom is inserted into a hole in back of the tractor shovel bucket. The boom can be attached in just 1 min.

**WORKS LIKE A CRANE**—Michigan tractor shovel fitted with the pipe boom positions corrugated pipe culverts in the fill.

boom is a small, oval steel plate with two holes in it. Two shackles with their pins inserted through the holes are attached to the plate.

One of the shackles holds a loop of wire rope with lifting hooks at the ends. The other shackle also holds wire rope. Ends of this one are fastened to the bucket and keep the boom in place. Shackles at the ends of this rope are attached to small pieces of steel plates welded to the bucket.

It takes only about a minute to attach or detach the boom. And no tools are needed. Operation is simple, too, as the standard bucket controls actuate the bucket and the boom at the same time. Arute's men are quite happy with their gadget and are planning to make a bigger version of it for a Michigan 375A tractor shovel.

After the pipe culverts are in place, the embankment is ready for additional dirt and fine grading. Scrapers haul in the dirt spreading it on the run, and Caterpillar No. 12 graders smooth it out to the required grade. A pneumatic-tired roller drawn by a John Deere wheel tractor handles final compaction.

All of the fill material comes from six borrow pits. Some of these are in a long, narrow hill,

**FINE GRADING**—Caterpillar No. 12 grader completes the fine grading on the fill. Pneumatic-tired roller drawn by John Deere tractor takes care of final compaction.

**WASTE**—Surface layers of organic material are removed before fill is placed. Here a 2½-yd Northwest shovel loads a dump truck which hauls waste to empty borrow pits.

**DUMP**—Mack truck dumps unusable organic material into borrow pit that had supplied fill material used on completed portions of the highway. Cat dozer levels the area.

## MACHINES BATTLE SWAMP . . . *continued*

or esker. It parallels the right-of-way for about 4 mi on the north end of the job. The esker contains excellent fill material that is well suited for scraper operation because it loads easily.

The problem is a railroad that runs between the esker and the highway. Arute had to build several grade crossings where the haul roads cross the tracks. A guard is stationed at a crossing to warn scraper operators of approaching trains. The guard also cleans spilled dirt from the tracks. Hauling the dirt is a fleet of Caterpillar DW20's and Euclid S-18's. Cat D9's work as pushers.

### *Rocky Fill*

On the southern end of the project the esker ends, and good fill material is scarce. Here the road runs through low hills built up of glacial till. It contains a large percentage of boulders, many of which are too big for handling.

This material can't be moved with scrapers. To handle it, Arute moved in a fleet of Caterpillar dump wagons and several 2½-yd shovels. These dig out shallow borrow pits near the right-of-way, and the dump wagons place the fill. It's the highest fill on the entire project reaching to a height of about 15 ft.

Here, too, the top layer of the original soil has to be removed before fill can be placed. But the organic material is much deeper than in the swampy portion, and dozers alone cannot handle it.

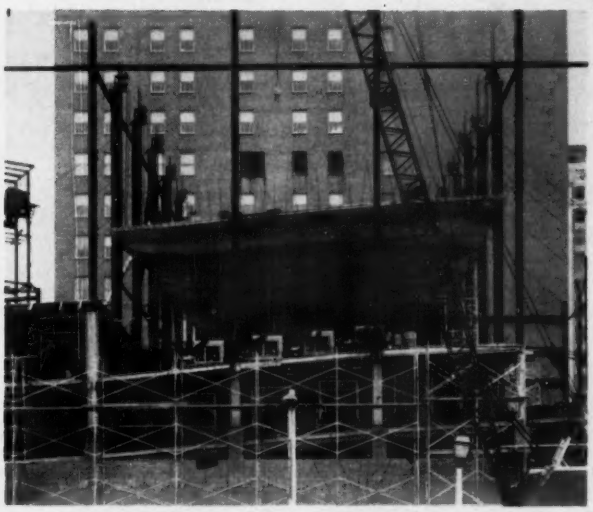
Instead, shovels and trucks dispose of the waste. Dozers keep the dirt within reach of the shovels and push aside oversize boulders. Mack dump trucks haul the waste to borrow pits that had supplied the fill for previously completed portions of the embankment. Dozers take care of leveling the waste dumped into the borrow pits.

### *Men on the Job*

Running the job for Arute Bros., Inc., is Jack Arute who is project manager. The work is under the direction of Robert W. Sweet, district engineer for the New York Dept. of Public Works. Francis Campbell is the engineer in charge. Erdman, Anthony & Hosley of Rochester, N.Y. are consultants. Their resident engineer is John F. McGilvray.

*The first lift slab job in Newark, N. J., is notable for another reason—it's the first time the lift slab technique has been tried with slabs that are tilted and warped in two directions.*

**JACK CONTROL** — This electrical panel on the top slab, and another like it, control the 22 lift jacks.



**LIFTING OPERATION** — Jacks on top of columns raise slabs from second floor where they were cast. The first two floors were poured in place. When the floors in all three bays are complete, slabs will form a continuous spiral ramp around perimeter.

# Jacks Lift Double-Warped Floor Slabs

THE LIFT SLAB people have added a new technique to their repertoire — casting and lifting slabs that are warped in two directions.

The Lift Slab Corp. of New York was the first outfit to do it. They lifted 11 double-warped, 56x190-ft slabs that will form the roof and upper floors of a 7-story, 500-car public parking garage in Newark, N. J. Owner of the building is the Prudential Insurance Co. This is the first application of the lift slab technique in Newark.

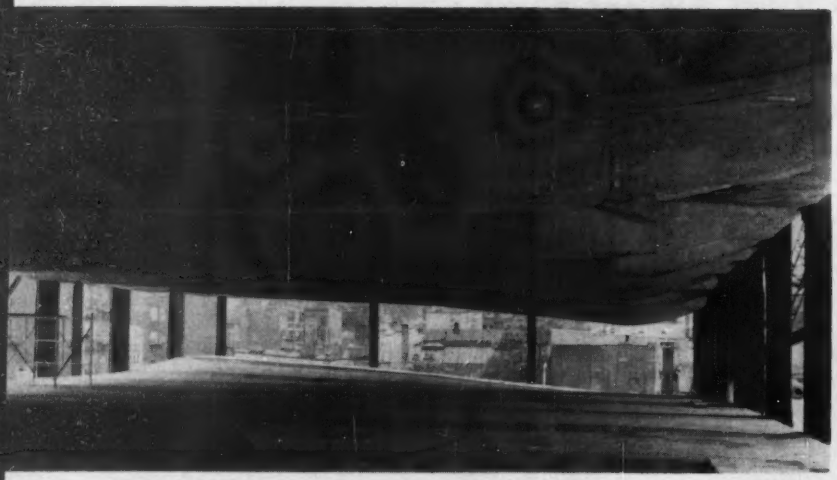
The 170-ft-wide, steel-framed garage was built in three sections, each about 56 ft wide. The first two floors consist of steel columns and concrete floors poured in place. The top floors and roof were cast together on the second floor by the general contractor, Frank Briscoe Co. of Newark, and jacked into position by Lift Slab Corp.

There were four slabs to be lifted in the center and south sections of the building, three slabs in the north part. The center bay was erected first. The slabs were warped and positioned in such a way that when they were all in place, the outer sections of the floors form a continuous spiral ramp on which automobiles can drive to any floor in the garage.

In addition to being warped, the slabs are slightly tilted. They were cast on the angle required in their final location and lifted in that position.

### *Unusual Beams*

The beam structure of the garage presented some unusual problems. The span of the bays



**TWISTED SLAB**—The middle part of the slab (foreground) is flat. Toward the end of the bay, the slab twists up on one side, down on the other, to form part of perimeter ramp.

(56 ft between the rows of steel columns) was too long for waffle-type slabs or other light grid support. And the irregular plane of the slabs precluded the use of standard beams such as prestressed concrete tees, which might otherwise have been satisfactory.

The solution was to cast V-shaped, shell beams integrally with the under surface of the slabs. The beams are 30 in. deep, about 5 ft wide at floor level, and 30 in. wide at the bottom. When cast, they were hollow and open at the top. From underneath the slab, they looked like beams; from above, they looked like V-shaped troughs in the floor.

Forming the troughs was tricky because the sides curve inward at the ends and the bottom curves upward. Also, the shell gets thicker toward the ends. Briscoe built braced plywood "boats" to form the inside of the trough. The boats had a tendency to "float" up as concrete was poured under them. To prevent this, Briscoe tied them down through pipe sleeves cast in the soffit of the shell below.

While the slabs were cast, the beams on the upper floors nestled in the troughs of the beams below them. A chemical compound, Techkote 400 Y-S, kept them from sticking together during the casting.

The floor slabs were poured with lightweight concrete. The concrete in the beams was standard except that the aggregate was smaller than ¾-in. dia because of the close spacing of the reinforcing steel.

After the slabs had been jacked up, the troughs were filled in to form a flush floor surface. First, two parallel Mervoid paper tubes were placed in the trough and surrounded by wire mesh. Then lightweight concrete was poured in to fill the rest of the space.

The concrete served mainly as a filler; it was not intended to provide much structural support. The strength of the beam comes from its shell shape, the reinforcing in the shell, and a solid steel plate that is contained in the soffit section of the shell. The protruding ends of this plate were welded to the steel columns to form the end shear connections for the beams and slabs.

### *Lifting the Slabs*

Although the slabs themselves are unusual, the lifting technique was more or less conventional. Lift Slab Corp. used twenty-two 75-ton, Youtz-Slick hydraulic jacks, mounted on top of the steel columns of the bay under construction.

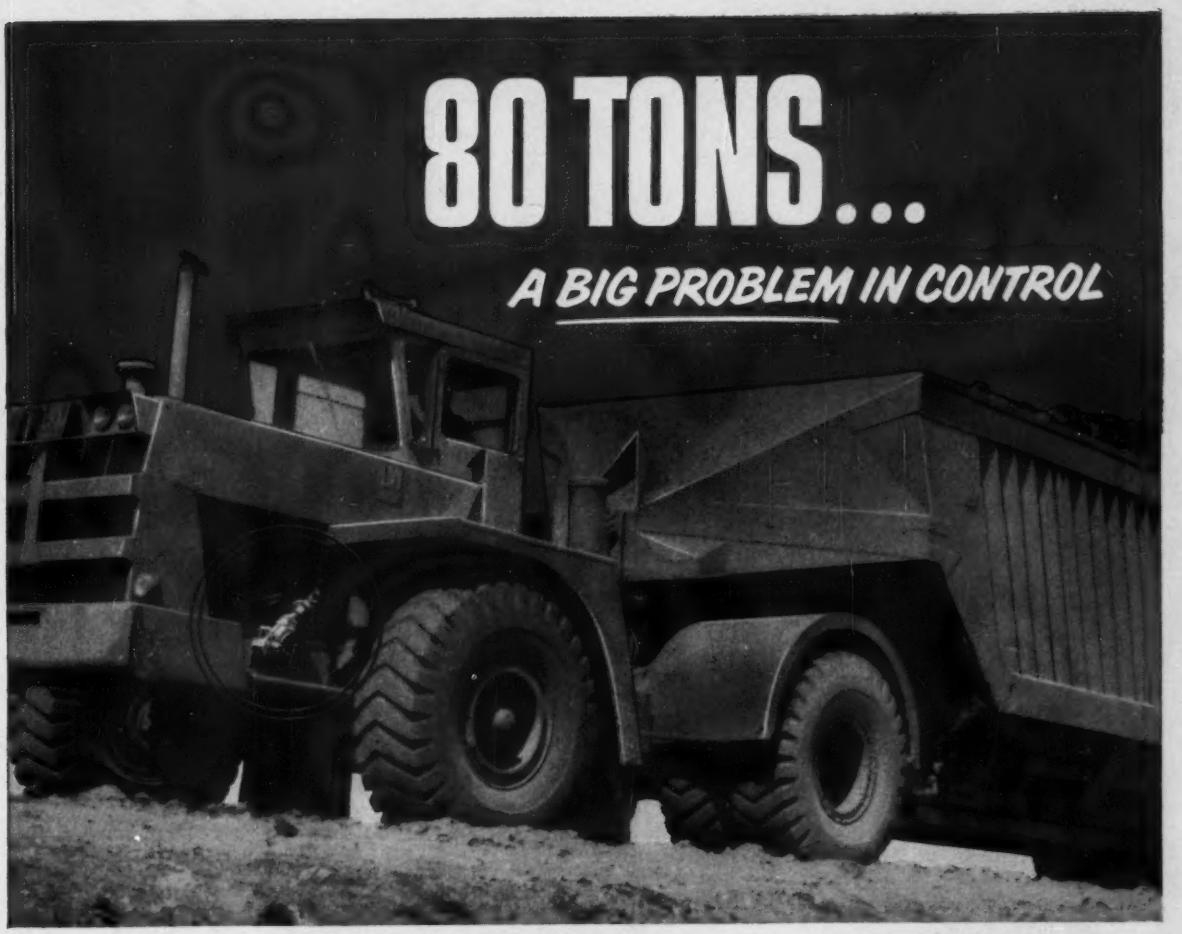
That number of jacks required two power units and two electric control panels. This equipment was located on the roof slab during the lift.

General lifting procedure was to lift the roof into position first, then lift the underlying floors two at a time, where possible. Normal lifting rate was about 10 ft an hr.

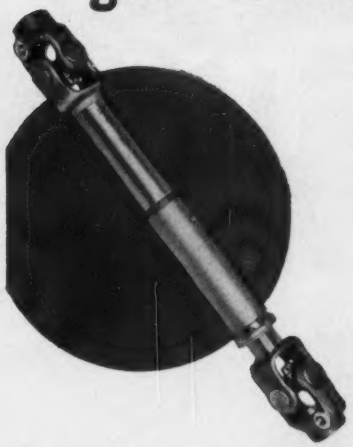
On two bays, the roof had to be lifted 40 ft. On the third bay, the roof went up 50 ft.

The garage is scheduled to be finished this year. Robert Egelhoff, president of New York Lift Slab Corp., was in overall charge of the lifting operation.

**UNUSUAL BEAMS**—Shell-type beams are cast with each one nestling in the one below. After the slabs have been lifted, the troughs are filled in with paper tubes and concrete.




# BLOOD BROTHERS jointed steering assembly guides giant LeTourneau-Westinghouse coal hauler!



No matter how large the equipment you design, there's a Blood Brothers steering or jointed driving assembly big enough to do the job. One example of the use of Blood Brothers components on large equipment is the L6S Steering Assembly on the LeTourneau-Westinghouse Haulpak Coal Hauler.

This mammoth, highly maneuverable "mountain mover" is a bottom-dump 450 h.p. diesel unit that weighs 37 tons. Yet it carries 2½ *times* its own weight in payload, or the equivalent capacity of over one and one-half standard 50-ton railroad cars!

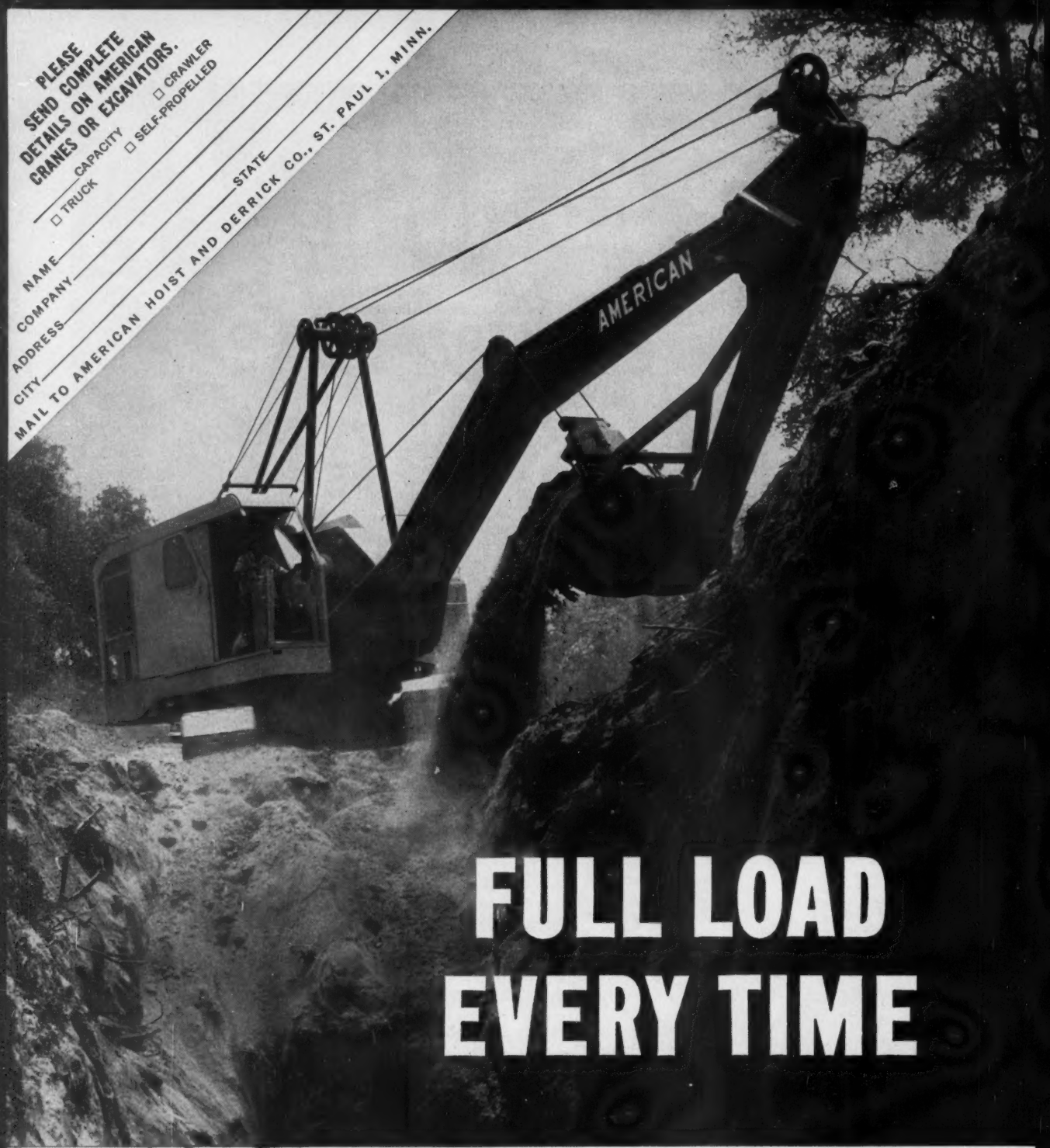
Rockwell-Standard's Universal Joint Division offers you a wide range of specialized engineering experience—involving everything from manual steering assemblies . . . to power take-off drives . . . to heavy-duty propeller shafts. Whatever size and type equipment you manufacture, Rockwell-Standard can save you time, money – help you achieve higher standa[illegible] performance. Let us [illegible] project!

Write for complete[illegible]

*Another Product of...*

ROCKWELL-S[illegible]
CORPO[illegible]
Universal Joint Di[illegible]

*Circle 89 on Reader Servi[illegible]*

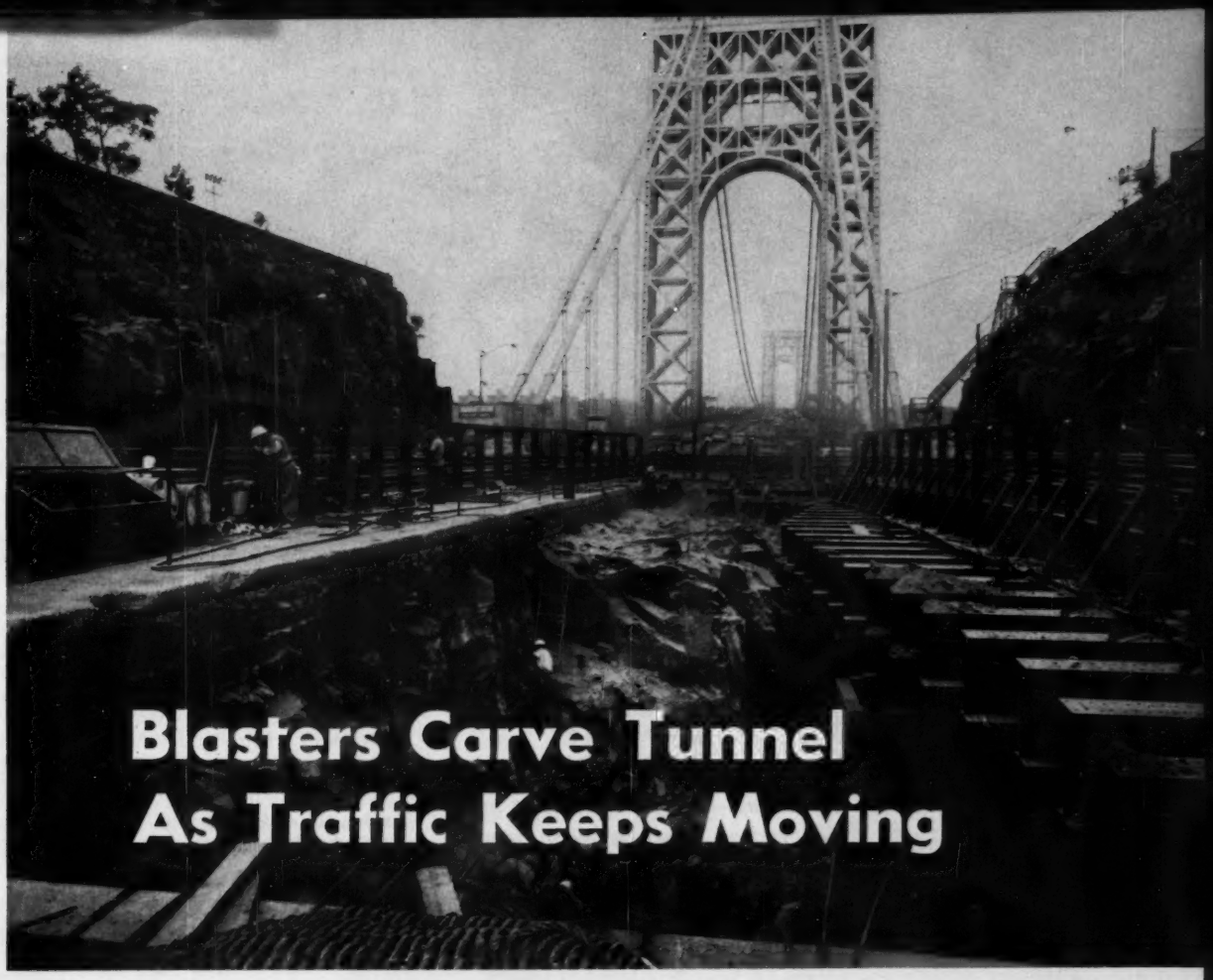



*Ask your American Distributor for detailed and illustrated information on the more efficient Heavy-Duty American Equipment*
*or write us direct with the above coupon.*

**AMERICAN HOIST**

| | | |
|---|---|---|
| EXCAVATORS-CRANES to 4½ yds.-110 tons | DERRICKS-HOISTS to 800 tons | CROSBY-LAUGHLIN DIVISION |
| LOCOMOTIVE CRANES to 130 tons | REVOLVER CRANES to 400 tons | Forged fittings for wire rope-chain |

*Circle 200 on Reader Service Card*



# Blasters Carve Tunnel As Traffic Keeps Moving

*Tunneling through the hard trap rock of the Palisades to make way for New Jersey approaches to the new lower deck of the George Washington Bridge calls for precision blasting. Using the cut and cover method, the contractor is doing the work in five stages, keeping traffic flowing on eight existing approach lanes.*

A TWIN-TUBE TUNNEL that will connect the new lower deck of the George Washington Bridge with New Jersey approaches is being blasted by the cut and cover method in the midst of a continual stream of traffic.

Keeping eight lanes of traffic flowing while work is in progress alongside existing approach lanes is the biggest headache facing contractor George M. Brewster & Son Co. of Bogota, N. J. But even without the handicap of a confined site area, this blasting job would be as tough as they come. Drilling is difficult because the diabase trap rock of the Palisades is extremely hard. And in spite of cleavages that riddle the rock, specs call for close tolerances that make precision blasting a must.

### Rock Returns as Aggregate

The contractor is taking advantage of the hardness of the trap rock, however, by using it as concrete aggregate. A primary crusher squeezed onto the crowded job site reduces shot rock to an easy-to-handle size. Then trailer trucks haul it to Brewster's Bogota plant where a secondary crusher completes preparation of the stone. It goes back to the job as aggregate in the concrete that goes into retaining walls and the roof and walls of the tunnel.

The tunnel is Y-shaped. It consists of a 300-ft-long stem at the end of the bridge and two branches that curve away from the fork. One of the 47-ft-wide branches is 250-ft long, the other extends 310 ft beyond the fork. Each of the branches will carry three 12-ft-wide lanes of roadway and two 3-ft sidewalks. The combined section at the stem varies in width from 83 ft at the portal to about 120 ft at the fork.

Because the combined stem section of the twin-tube tunnel is underneath the existing eight approach lanes of the 80-ft-wide toll plaza, the plan calls for cutting out this section in five stages. The contractor shifts traffic around each stage as the work progresses, keeping the eight lanes open at all times.

*continued on page 94*

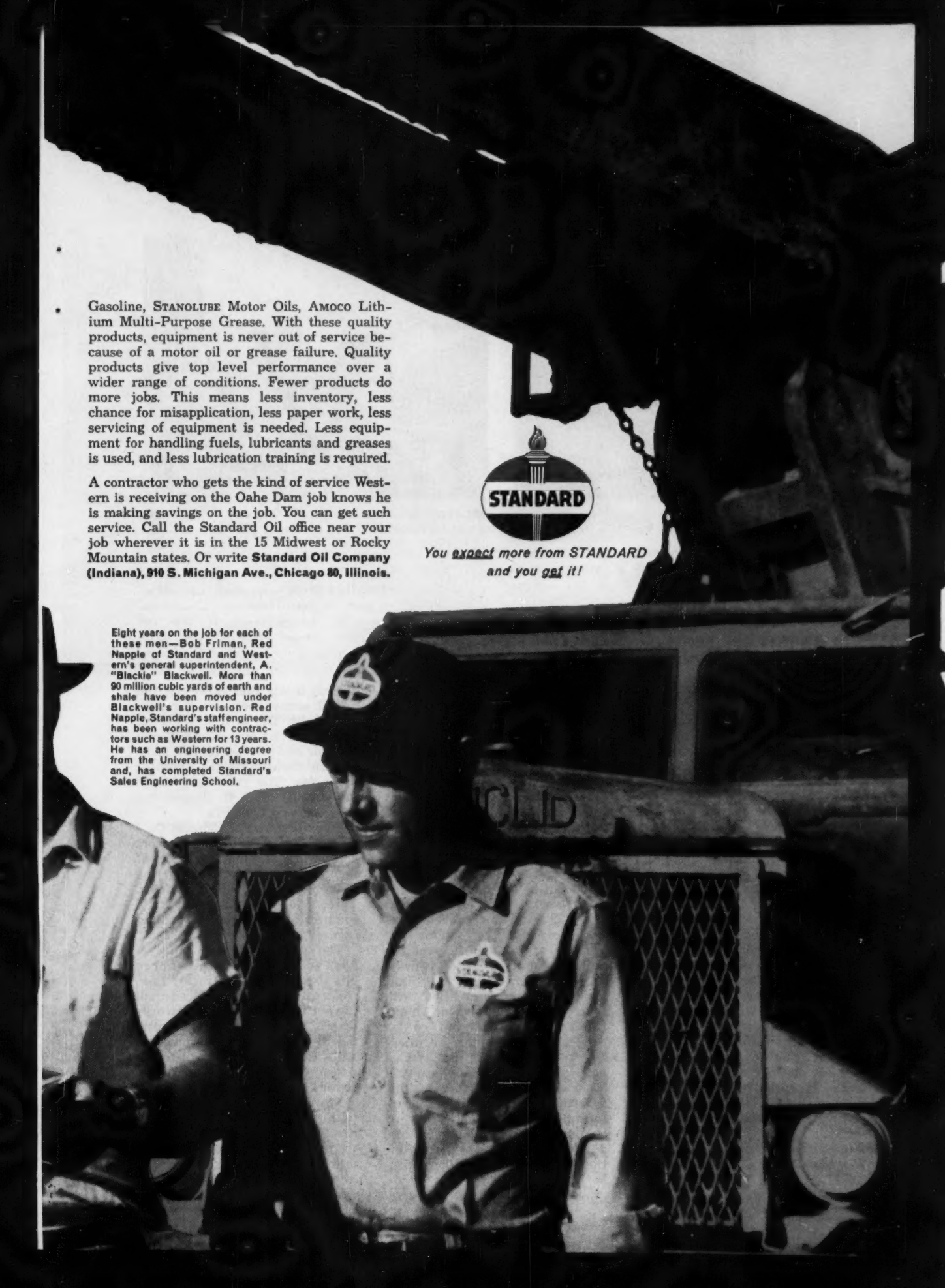
Multi-million dollar picture. Here is part of Western's equipment lined up for inspection at Oahe Dam. Photo shows 86 trucks, 23 bulldozers and crawler pieces and 9 scrapers.

# 2 ways Standard Oil helps Western Contracting Corporation save on Oahe Dam job

*In eight years on project, 10 million gallons of diesel fuel and gasoline have been delivered on time and when needed*

**Saving No. 1** F. L. "Red" Napple, Standard Oil staff engineer, and Standard Oil agent Bob Friman have been serving Western on the Oahe Dam project since the first dirt was moved in 1952. This means continuity of service that can be invaluable to a contractor. Red Napple has an engineering degree plus more than 13 years' experience in just this kind of work. Western thus has the equivalent of another engineer helping them. Napple is located at Aberdeen and Friman at Pierre, both only a few miles from the job. Western works around the clock. So does Standard. Bob Friman and his men make deliveries 24 hours a day, winter and summer. Western never has equipment down while waiting for deliveries of fuels, lubricants or greases.

**Saving No. 2** Western uses only quality products —Standard's Diesel Fuel, STANDARD RED CROWN



Gasoline, STANOLUBE Motor Oils, AMOCO Lithium Multi-Purpose Grease. With these quality products, equipment is never out of service because of a motor oil or grease failure. Quality products give top level performance over a wider range of conditions. Fewer products do more jobs. This means less inventory, less chance for misapplication, less paper work, less servicing of equipment is needed. Less equipment for handling fuels, lubricants and greases is used, and less lubrication training is required.

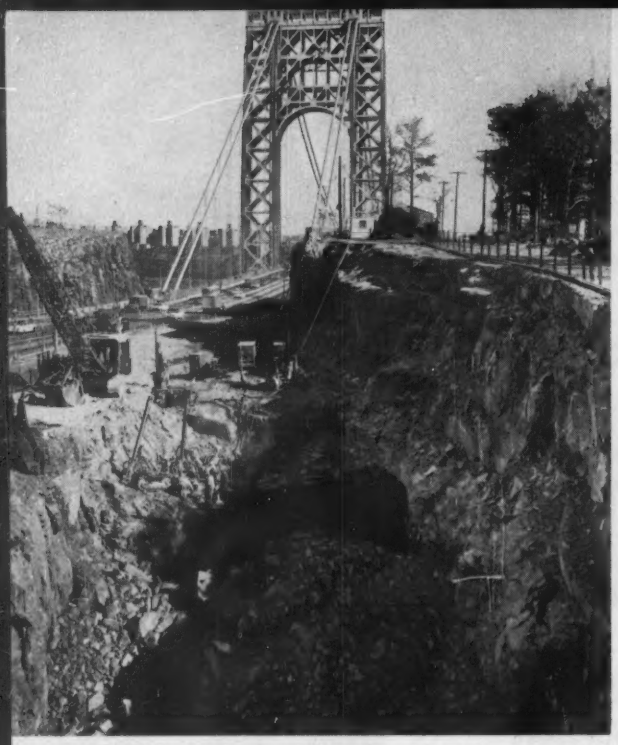
A contractor who gets the kind of service Western is receiving on the Oahe Dam job knows he is making savings on the job. You can get such service. Call the Standard Oil office near your job wherever it is in the 15 Midwest or Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Illinois.**

STANDARD

*You expect more from STANDARD and you get it!*

Eight years on the job for each of these men—Bob Friman, Red Napple of Standard and Western's general superintendent, A. "Blackie" Blackwell. More than 90 million cubic yards of earth and shale have been moved under Blackwell's supervision. Red Napple, Standard's staff engineer, has been working with contractors such as Western for 13 years. He has an engineering degree from the University of Missouri and, has completed Standard's Sales Engineering School.

# To Keep Eight Lanes Open, They Cut and Cover in Five Stages



**DRILLING** — After line-drilling along edges of cut to pre-split tunnel walls, track-mounted rigs drill bore holes for big blast.

**EXCAVATING** — A Bucyrus-Erie 54-B with a 2½-yd shovel loads a Koehring Dumptor that hauls shot rock to primary crusher at site.

**ERECTING STEEL** — Manitowoc 3500 with 60-ft boom sets header beam atop falsework consisting of A-frame towers at 20-ft centers. Bents spaced at 5 ft frame tunnel.

**BLASTERS CARVE TUNNEL . . .** *continued from page 91*

First Brewster blasts out a narrow strip along the south side of the approach lanes. This first stage includes all but a thin triangular slice of the single-tube branch on that side because of the sharp curvature of the branches beyond the fork of the Y.

After a subcontractor sets steel bents in place in this section, Brewster pours the roof slab that covers it and diverts traffic onto this completed strip. This opens up another narrow strip alongside and creates an island where they can work in the midst of a river of traffic.

When this second stage is blasted out and roofed over, Brewster moves to the other side of the approach lanes to start the third and fourth stages, which are mirror images of the first two. This leaves a wedge-shaped chunk of rock about 18-ft-thick in the middle to dispose of in the fifth and final stage. They blast out this wedge and the steel subcontractor sets permanent columns along the centerline of the combined twin-tube section. These columns carry the ends of the roof beams, which up until this point have been supported at the inner ends by temporary falsework. This completes carving out the tunnel.

### *Line Drilling is First Step*

At the start of each stage, a team of Chicago Pneumatic and Joy tractor-mounted rigs line-drill 2½-in. holes along the edges of the cut. Blasting crews then set and detonate small charges in these holes to pre-split the walls of the cut before blasting the enclosed rock.

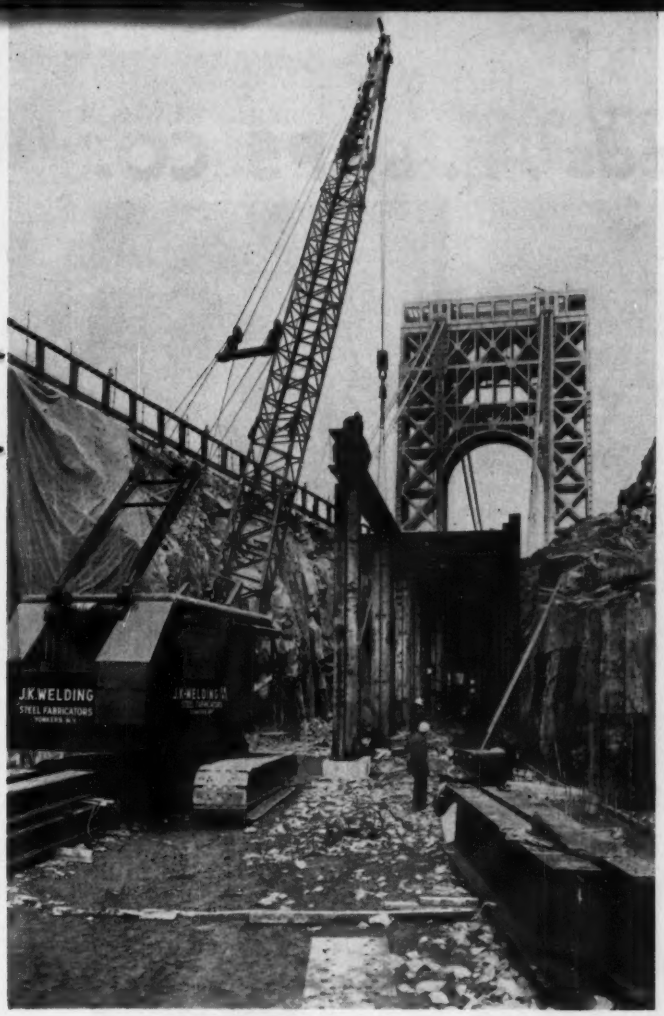
The pre-splitting prevents excessive overbreak beyond the neat excavation line, which gives the contractor only 3 in. of leeway. Any breakage beyond this limit must be scaled and filled with concrete. This can become an expensive proposition, but so far Brewster has nothing to worry about. Most of the line-drilled holes along the side cuts are split cleanly down the middle, making a row as straight and even as perforations cut in paper.

Four Chicago Pneumatic and Joy drills with 4½-in. drifters then bore holes for the large production blasts that carve out the tunnel section between the pre-split walls. The drill crews work two faces at a time ordinarily, one at each end of the tunnel. Hole pattern varies with the depth of the holes. The maximum depth for one lift is 35 ft. Biggest cut calls for two such lifts.

Two stationary 1,850-cfm Chicago Pneumatic compressors housed in a building at the top of the 70-ft cliff overlooking the tunnel supply air to the drills. Three 600-cfm Ingersoll-Rand compressors feed the line-drilling rigs.

The Atlas Copco, Brunner & Lay, and Timken carbide-tipped bits used by the contractor need frequent sharpening because of the hardness of the rock. A workman is kept busy full time dressing the bits with an air-powered Atlas Copco grinder. Drillsteel is Atlas Copco 1¼ and 1½-in. rounds in 10-ft changes.

Powder crews load the holes with several grades of Atlas dynamite. Dupont millisecond delays trigger the blast, which is held down by steel mats to prevent



**DETOURING TRAFFIC** — Traffic flows unimpeded around island created by barricades where second stage is being completed. Contractor will start third stage on other side of approach lanes after pouring deck.

rock from flying out of the cut. All blasting is restricted to between 10 am and 3 pm to avoid rush-hour traffic. Signalmen halt vehicles several hundred feet beyond the blast area.

Two Bucyrus-Erie 54-B shovels fitted with 2½-yd Amsco dippers excavate most of the shot rock. They are assisted by a 2½-yd Lorain 820 backhoe and at times by a Manitowoc Speedcrane wielding a 3-yd Owen clamshell. But ordinarily the Manitowoc is busy placing steel mats or breaking up oversize chunks of blasted rock with a headache ball.

These rigs load four Koehring Dumptors for the short haul to the primary crusher, where they end-dump an average 800 yd per 8-hr day. To avoid spillage on local streets and overloading of thin asphalt pavements, Brewster limits loads to about 7 yd. Excavation on the job will total 180,000 yd, of which about 85% is rock.

### *Crusher Reduces Rock*

The Dumptors feed a 48x60-in. Kennedy-VanSaun crusher that is dug-in below street level under a frame building that houses an 18-yd hopper and the controls. Capacity of the crusher is 350 tons per hour. Jaw opening is set at 6 in.

An automatic Farval lubrication system greases all bearings of the jaw crusher. Indicators on a control board show the level of grease in each of some 18 rubber hose lines that lead to parts of the crusher requiring lubrication. A workman fills the master cylinders feeding the hose lines about three times a day to keep the indicator level up. A small electric motor that keeps pressure on each line takes care of the rest of the lubrication chore.

A 5-ton chain hoist rides a monorail over the hopper of the crusher. It frees chunks of oversize rock that occasionally block the opening. At the other end a 30-in. Hewitt-Robins conveyor carries crushed rock to the top of a 300-yd twin-bin contractor built surge hopper.

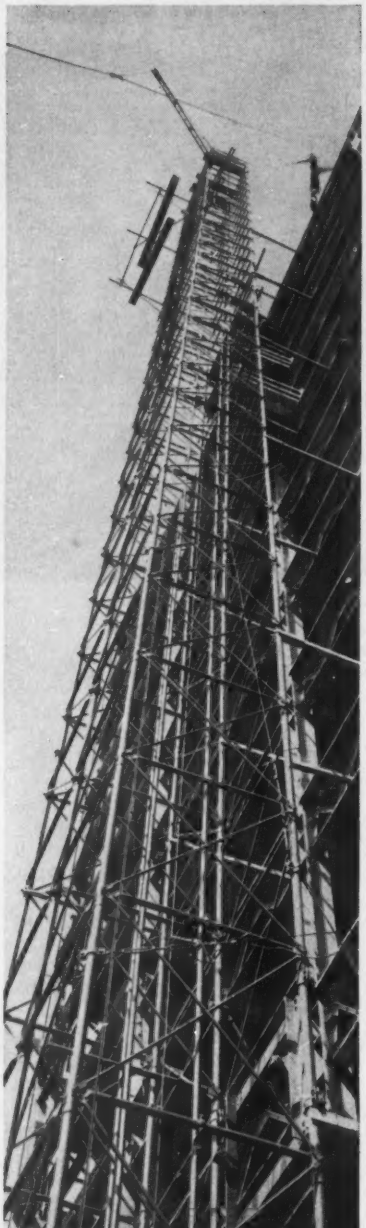
A fleet of six Mack trucks with 18-yd Cook bottom dump trailers haul the crushed rock to an Allis-Chalmers secondary crusher at the contractor's headquarters 6 mi away. Primary reduction at the job site increases payloads and makes the crushing operation economical.

When blasting and excavation of the first stage is complete, subcontractor J. K. Welding Co. of Yonkers, N. Y., comes in with a Manitowoc 3500 crane to erect the steel bents that will support the roof of the tunnel. Along the outer side of the tunnel cut they position on concrete footings, 14-in. WF columns at 5-ft intervals. After setting temporary falsework along the opposite side of the cut, they erect 36-in. WF roof beams that span the gap between supports. The falsework consists of A-frame towers made up of four inclined 14-in. I-beams set at 20-ft centers and capped by 60-ft-long sections of 36WF230.

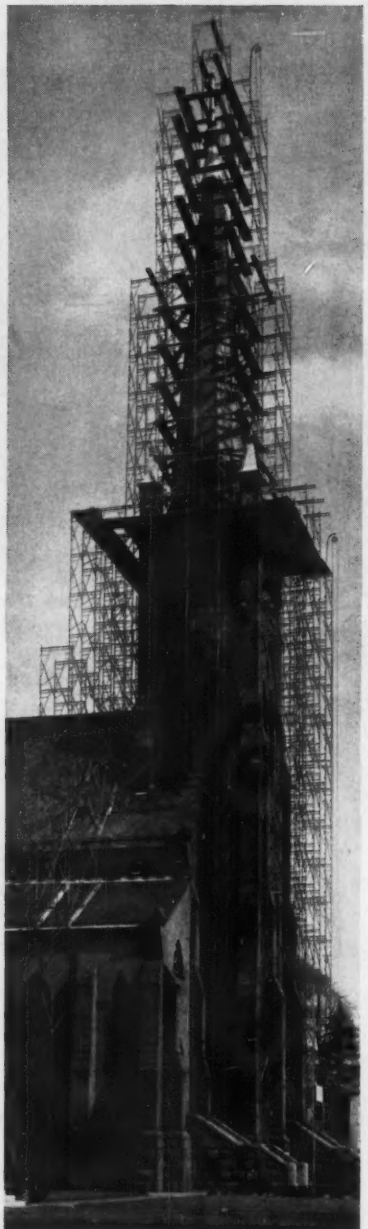
When second stage blasting is completed, J. K. extends the roof beams in the combined twin-tube section of the tunnel, moving the A-frame towers a section at a time as the work progresses.

Working hand in hand with Brewster as they complete a stage,

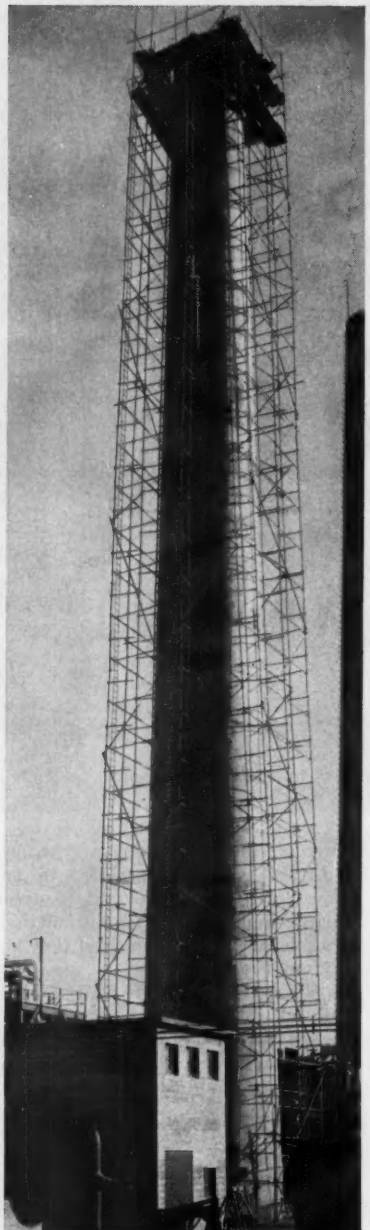
# Scaffolding Methods . . . by PS CO.



**FAST MATERIAL LIFT**—This 227'-high "Gold Medal"® Steel Hoist Tower is used by The Wm. Simpson Constr. Co. to move materials rapidly up when and where needed on the First Federal S. & L. Ass'n Bldg., Los Angeles.



**OVERALL FOR STEEPLE JOB**—To provide Eastern Renovating Contractors with safe, stable, wide, overall working platforms for steeple repairs, "Trouble Saver"® Scaffolding is built up quickly from the ground and roof of this church in Wallingford, Conn.



**UP HIGH FOR WRECKERS**—Here, "TubeLox"® tube and coupler Scaffolding is easily erected from only four basic parts to provide the height necessary for demolition of this concrete chimney in Torrance, Calif. Emsco Concrete Cutting Co., contractor.

Complete scaffolding equipment and engineering service offered through nation-wide sales offices or representatives. Look under Patent Scaffolding in the Yellow Pages for your nearest source.

**SALES** **RENTALS**

**THE PATENT SCAFFOLDING CO., Inc.**

**38-21 12th Street, Dept. CM&E, Long Island City 1, New York**

1550 Dayton St., Chicago 22 • Branches in all principal cities • 6931 Stanford Ave., Los Angeles 1

IN CANADA: CANADIAN PS CO., 329 DUFFERIN ST., TORONTO

*Circle 96 on Reader Service Card*

## BLASTERS CARVE TUNNEL . . . *continued*

J. K. Welding repeats this process for the third and fourth stages on the other side of the approach lanes. After the wedge of rock making up the fifth stage is cut out, the steel erectors must place the end sections of the roof beams that frame into a row of columns at the center of the combined tunnel section. To make sure these roof beam sections fit, the field crews make careful measurements of the actual span and give this information to the fabricators at J. K.'s Yonkers yard, where the beams are cut to exact length and the ends milled. With these sections framed into the center columns, the steel framing of the tunnel is complete.

As the subcontractor completes steel erection in each stage, Brewster gets ready to pour the roof slab that will cover that portion of the tunnel. The outer walls of the tunnel, which encase the row of exterior columns, will be 8 in. thick; the roof slab is a uniform 10 in. thick. A Bucyrus-Erie 38-B with a 1¼-yd laydown bucket fills conventional plywood deck forms with concrete delivered by transit-mix trucks to take care of the roof slab pours.

The job calls for about 35,000 yd of concrete. A 125-yd-per-hour Noble Mobile batch plant at the contractor's nearby field base supplies concrete for the project. Equipped with a three-bin aggregate hopper that holds a total of 100 tons, the plant has a 275-bbl cement storage compartment as well as an additional ground silo that holds 300 bbl. A conveyor carries batches from a transfer hopper to a 5-yd holding hopper that charges a tilting mixer.

### *Men on the Job*

Project manager for Brewster is Earl S. Hoy, Project engineer is Palmer Kauffman. Resident engineer is Donald J. Devine. General superintendent is Donald Totten. Field superintendents are Ed Kennedy, Dave Abel, and George Blackwell. Whit Johnson is blasting superintendent.

Ammann & Whitney of New York City are the consulting engineers for the project. In overall charge of George Washington Bridge improvement for the Port of New York Authority is Harry A. Druding. PNYA resident engineer is F. H. Wernecke.


# BIGGEST NEWS IN SHOVELS

**RAZOR · LITE** The new lightweight shovel with the famous Razor-back "backbone" construction.

- The new RAZOR-LITE is made for the user who prefers a lighter shovel — the RAZOR-BACK for those who want a big, super-strong shovel.
- RAZOR-LITE like RAZOR-BACK, has the same 13 gauge "backbone" *all the way from the top of the socket to the cutting edge*, where all other shovels are thinner and wear out faster.

**LIGHTWEIGHT:** Light by the scales, not just light in name — comparison with other so-called "lightweights" proves RAZOR-LITE superiority.

**FULLY GUARANTEED:** RAZOR-LITE materials and construction are fully guaranteed — will give more service per dollar than any other shovel.

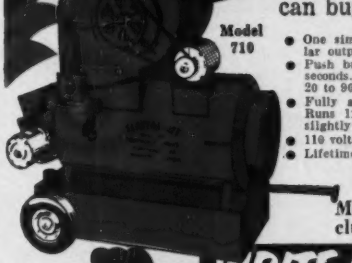
- Ask your supplier for RAZOR-LITE and RAZOR-BACK shovels, today.

**THE UNION FORK & HOE COMPANY, Columbus 15, Ohio**

*Circle 97 on Reader Service Card*

# ELECTRO-JET

SELLS FOR ONLY **$298** F.O.B. FACTORY




**CONTRACTORS PORTABL[E] HEATER**

Contractors tell us it's sens[ational]! It really proved itself in the field — 5,000 sold last year. Priced so low [you] can buy several!

- One simple oil burner pressure adjustment nearly doubles regular output 200,000 BTUs.
- Push button control. Lights instantly—up to 360 degrees in 20 seconds. Thermostat maintains constant temperature ranging from 20 to 90 degrees.
- Fully automatic oil burner burns kerosene or No. 1 fuel oil. Runs 12 hours on one filling. Gas engine driven model priced slightly higher.
- 110 volt blower delivers 2,500 cu. ft. of air per minute.
- Lifetime guarantee.

**DEALERS WANTED!**

Make $500 a week. Complete line. Exclusive territory.

**200,000 BTU Oil or Gas Fired Heating Plant**

Portable unit burning any grade home fuel oil can be installed for permanent or temporary heat.

**$329** F.O.B. Factory

**WRITE FOR DETAILS TODAY**

ELECTRONICS, INC.
3012 East Cherry, Vermillion, S. Dak.

I am interested. Please send more information on—
- ☐ Electro-Jet Model 710 Portable Heater
- ☐ Model 800 Heating Plant
- ☐ I am interested in dealership. Send more information.

Name _____

Address _____

City _____

*Circle 203 on Reader Service Card*

# Here's how Champion "know improve efficiency and

## Exclusive Technical Help

If your fleet has an ignition problem, Champion will help you solve it. At your request, a Champion Field Engineer will call on your fleet. Working with your mechanics, he will pass along the latest ignition "know how" to help your fleet improve efficiency and reduce maintenance costs.

Use this exclusive technical help. Just call your Champion sales representative or supplier, or write Technical Service Dept., Champion Spark Plug Company, Toledo 1, Ohio.

## CHAMPION *Service Tips* for better engine performance

**Tips on solving engine overheating problems**

Before you undertake major repairs to correct engine overheating, make the following checks:

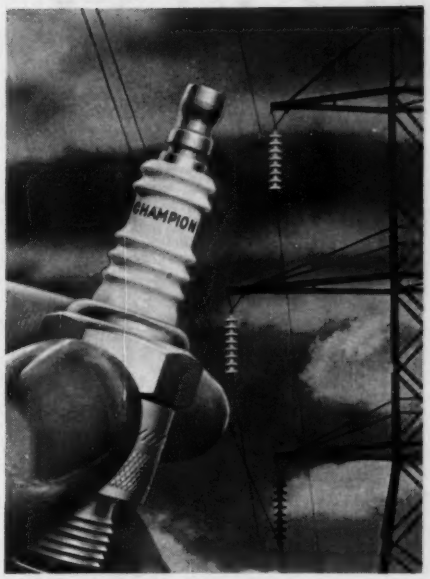
1. Make sure all drive belts are properly tensioned
2. See if radiator cap releases pressure at specified PSI
3. Check engine idle speeds to see if they are set to the proper specifications
4. Make sure radiator and hoses are leakfree
5. Check the water flow. When normal engine operating temperatures are attained, carefully remove the radiator cap and observe the coolant in the radiator. If water circulation can't be seen when the engine is slightly accelerated, check the thermostats for proper operation
6. Check the tightness of the pulley hub on the water pump and check water pump gasket

By quickly going over these important check points, you might save time and the expense of making unnecessary major repairs.

# how" can help your fleet reduce maintenance costs

**Specific Engine Design**

Champion specifically designs spark plugs to meet the requirements of *every* engine and operating condition. That's why you get maximum protection against fouling, and long plug life with Champions in all your engines.




**Exclusive 5-Rib Insulator**

Champion's exclusive 5-rib insulator is designed on the principle of powerline insulators—to prevent power-wasting voltage "flashover." That's why you get fast starting and long battery life with Champions in your engines.

**Service Aids**

You can save time and labor costs by checking spark plugs electronically, right in your engines, with a Champion Plug-Scope. Handy and easy to "read," the Plug-Scope also helps you track down various ignition problems faster.

DEPENDABLE

**CHAMPION**

SPARK PLUGS

CHAMPION SPARK PLUG COMPANY • TOLEDO 1, OHIO

*Circle 99 on Reader Service Card*

# DIESELS GO!

on winter's coldest days

ZERO START

DIESEL STARTING FLUID INJECTORS

PUSH-BUTTON STARTING

THERMOSTATIC CUTOFF

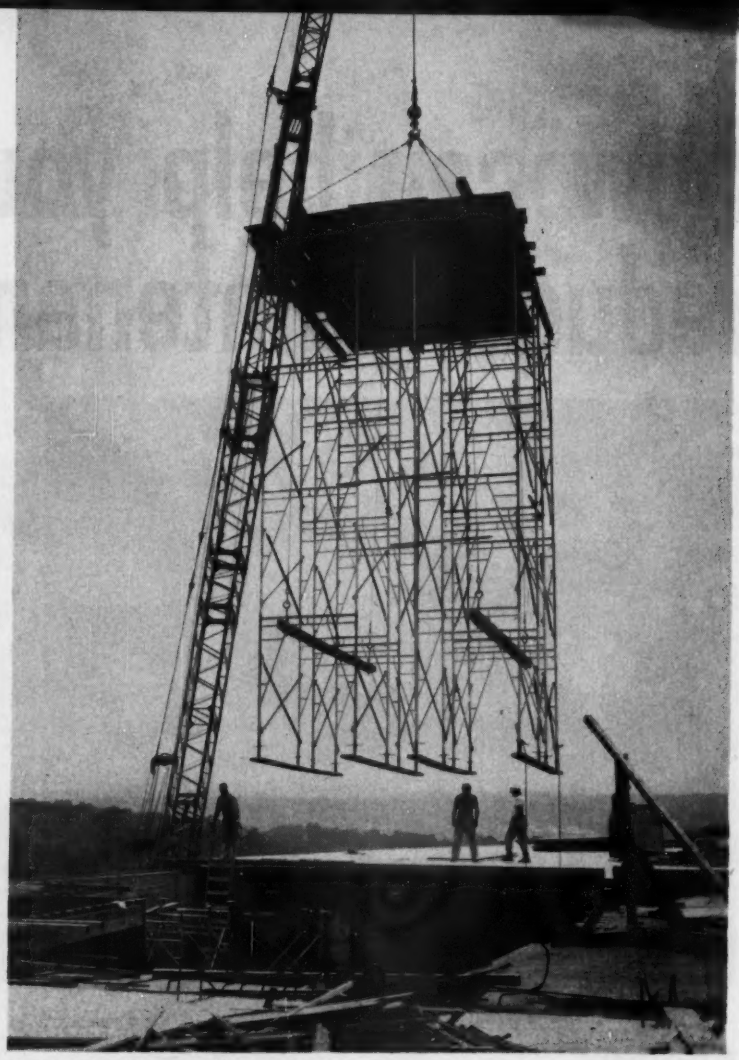
New for '61—the first and only push-button Diesel Starting Fluid Injector with *automatic cutoff*. Install this dependable, low-cost unit on all your Diesels. Eliminate cold-weather down-time—keep engines working a full shift.

A Zero Start Diesel Starting Fluid Injector can pay for itself in just one winter morning. Thermostatic cutoff prevents misuse.

See your equipment dealer now, or write

**PHILLIPS**
MANUFACTURING COMPANY
8200 Grand Avenue
Minneapolis 20, Minnesota

*Circle 100 on Reader Service Card*

**MOVING BETWEEN TANKS**—Crane lifts 13x15-ft form section and 28-ft-high shoring as a single unit to move the formwork.

**MOVING WITHIN A TANK**—Four-wheel dollies with hydraulic elevating mechanisms move the shores and forms between pours.

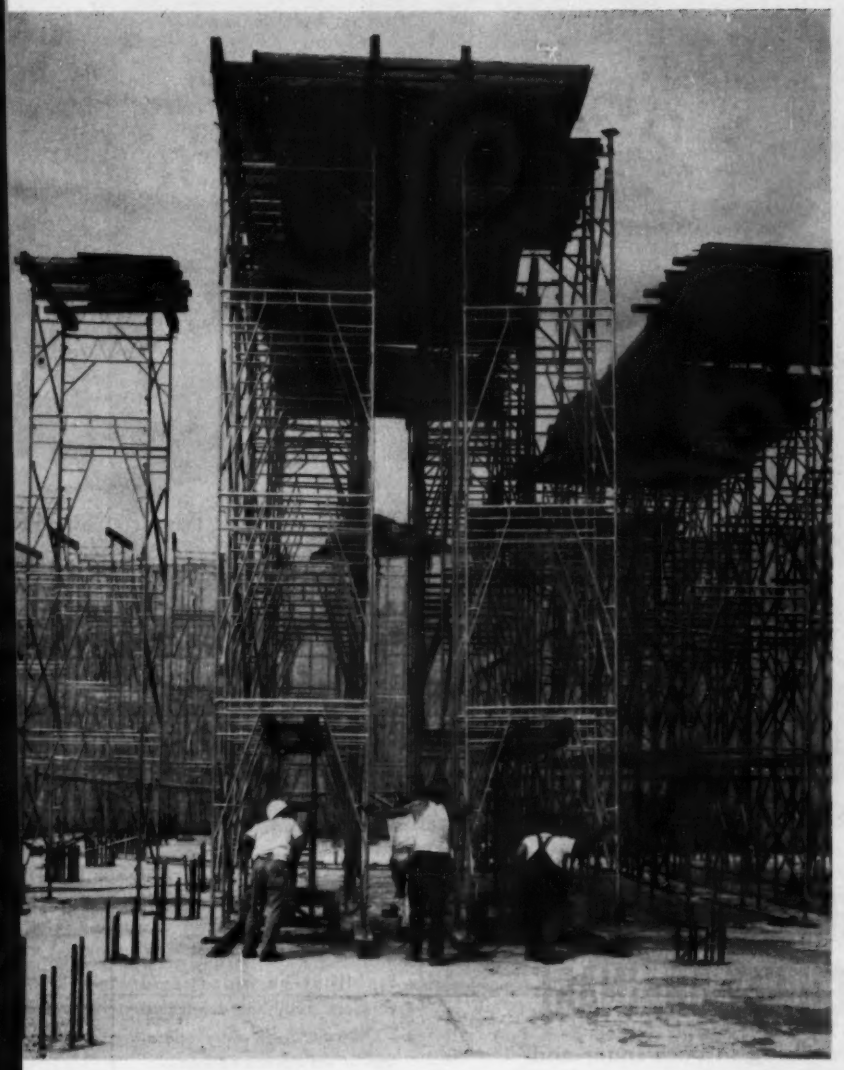
# Forms and Shores Move

CRANES AND DOLLIES move the formwork for the roofs of two circular prestressed concrete water reservoirs. Each form section covers about 200 sq ft and is supported on scaffold frames stacked four high. The forms and shoring assemblies are moved on dollies as a single unit to speed the forming operations. And when one tank is completed, they are moved to the other by crane.

Each of the water tanks is 320 ft in dia and 28 ft high. The tanks will store water for the city of Springfield, Mass. Contractor for the installation is a joint venture of Fruin-Colnon Contracting Co. of Indianapolis and C & C Construction Co. of Ft. Wayne, Ind. The system for moving the formwork was designed by the Patent Scaffolding Co.

About one third of a tank roof is formed and poured at one time. This requires almost 900 scaffold frames, stacked four high. The bottom three are 6½-ft frames, the top one is a 5-ft unit. Adjustable screw-type jacks are fitted into the bottoms of all scaffold frame legs.

Each 13x15-ft form section requires six such sets of Patent Scaffolding Trouble-Saver shoring frames. The frames support four beams—each made up of two 2x8's that run along the tops of the scaffold legs. Across the beams are 4x4 joists placed on 16-



# Without Disassembly

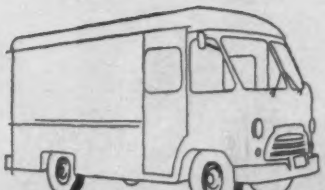
in. centers and covered with ¾-in. plywood.

Two pairs of 4x4 beams are necessary for lifting a form and scaffold assembly from one tank to the other. One pair of beams is laid on top of the form and serves as a spreader for the lifting lines. The other pair is inserted under the lowest scaffold frames. Lifting lines run through holes in the ends of the spreader beams and are attached to the ends of the support beams under the shoring assemblies.

To keep the adjustable legs from falling out of the bottoms of the scaffold frames, they are tied to the frames with wire. All of the scaffold frames sit on top of base plates attached to wood planks that act as mud sills.

A crane handles the formwork assemblies when moving them from one tank to the other. Moving them from pour to pour within a tank is accomplished with dollies.

Each form assembly is placed on a pair of four-wheel dollies designed and built by Patent Scaffolding. The dollies carry special frames whose elevation can be adjusted hydraulically with a pump. The forms are raised an inch or so off the floor of the tank and then moved by the dollies into position for one of the three pours it takes to complete the 9-in.-thick roof for one tank.

START 'EM FAST ON WINTER'S COLDEST DAYS!

ZERO START ENGINE HEATERS

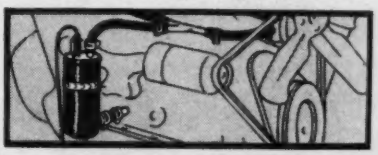
*Get a Fast Start Every Day...*

INSTALL ZERO-START ENGINE HEATERS

- Guaranteed fast starts
- Immediate warm engine efficiency
- Eliminate need for costly indoor storage
- Payloads arrive on time

Available in three types, headbolt—dipstick—tank. A size and model engineered for your trucks and tractors . . .

*America's Quality Line*



Distributed in Canada by: Pitt Distributing Co. Ltd. 80 George Street, Toronto 2, Canada

*Call your distributor or write*

PHILLIPS MANUFACTURING COMPANY
8200 Grand Avenue
Minneapolis 20, Minnesota

*Circle* 101 *on Reader Service Card*

# CLEVELAND DIGS SHALE AND ROCK 3-5 FT. DEEP FOR HIGHWAY DRAINAGE

**THE JOB:** 20 miles of drainage trenching in both inner and outer shoulders of five miles of dual highway for the relocation of U. S. Route 25 near Middletown, Ohio.

**CONDITIONS:** trench to be cut to grade, 18 inches wide, 3 or 5 feet deep depending on inner or outer shoulder, through very densely compacted shale and rocky material, further densified because much of the grade carried hauling equipment all through a winter, spring and summer.

**PERFORMANCE:** despite need to replace worn bucket teeth more frequently than usual because of the tough digging, a Cleveland J-40 dug the trench to accurate grade at the rate of 1,800 to 2,000 feet per 9 hour day.

**J-40 FEATURES**

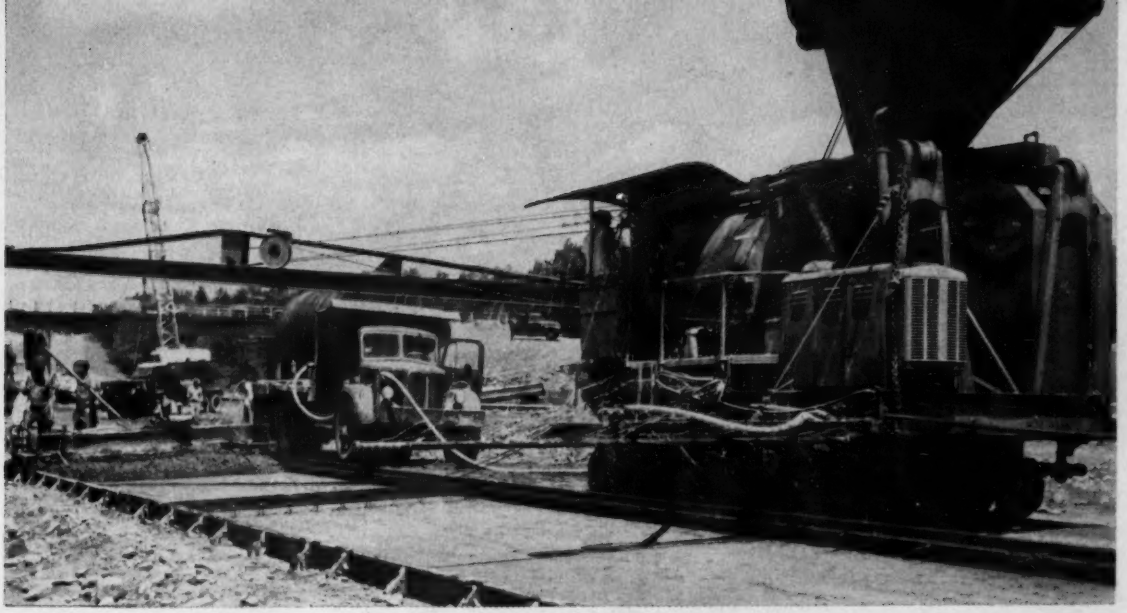
- Stability—on wide-spaced crawlers, 1000-hour-lubricated
- 100% control of every operation at the operator's seat
- V conveyor for faster, higher, more efficient spoil discharge
- Pulley-enclosed dual, independent, conveyor drive
- Automatic conveyor shifting from side to side
- Over 30 non-slipping digging speeds
- Digs trench 17½ to 30 inches wide, down to 5½ feet deep.

**WRITE TODAY** for Bulletin L-110, a detailed report on the performance of the J-40 on this tough highway drainage job.

**CLEVELAND TRENCHER**

THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO

*Circle 102 on Reader Service Card*



**SPRINKLING SUBGRADE**—Perforated pipe projecting from Koehring Twinbatch provides even water spray. Standard outrigger arm attached to paver tows screed.

# Paving Tricks Save Time

TWO UNUSUAL concrete paving features—hinged sheets of welded wire fabric and a subgrade sprinkler attached to the paver—are helping out on a New York highway job. The 8-mi stretch of four-lane divided highway north of Monticello, part of relocated State Route 17, is being built by Merritt-Chapman & Scott Corp., New York City.

The hinged fabric has only recently been introduced. Its hinge runs lengthwise, about 1 ft off center on the 12-ft-wide, 16-ft-long sheets. The reinforcing ability of the sheet is not affected by the hinge. But a continuous hinge down the roadway might have set up a plane of weakness. Therefore, the sheets are placed so that the hinge line altrenates from one side of the lane to the other on successive sheets.

Principal advantage of the hinged sheets lies in ease of shipping and handling. Because the width of a sheet is reduced from 12 ft to about 7 by folding, delivery can be made on flat bed trucks without clearance permits.

Expansion joints on the Route 17 job are 60½ ft on centers. The slab between them is reinforced at each end with an 8-ft-long, 12-ft-wide sheet of fabric. This is not hinged because it is within the allowable limit for truck transport. Between the end sheets go three 16-ft-long hinged sheets. Two workmen simply place and unfold each of these on the first lift of concrete.

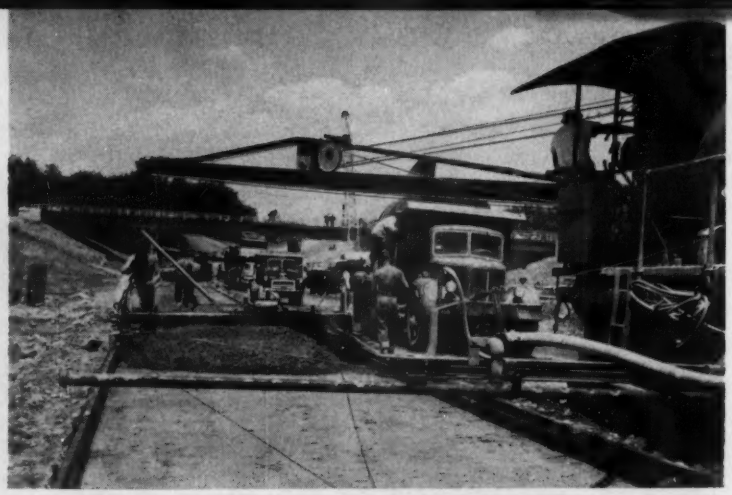
The concrete is mixed and dumped by a Koehring 34-E Twinbatch paver operating outside the forms. The machine also sprinkles the subgrade and tows a screed to strike off the concrete at a 6½-in. depth.

MC&S personnel developed the subgrade sprinkling device. It is simply a perforated pipe extend-

**PLACING REINFORCING**—Workers unfold sheet of hinged welded wire fabric. Hinging reduces width from 12 ft to 7.

## PAVING TRICKS . . .
*continued*

ing horizontally from the paver across the 12-ft lane. The pipe is supported by the outrigger arm of the Twinbatch's standard screed-puller attachment. Water is pressure-fed to the pipe at its midpoint by hose from the paver's supply tank. The paver operator controls the water discharge by a line running to a spring-loaded valve between hose and pipe. Opening the valve during forward movement of the paver allows a fine 12-ft spray of water to wet evenly the entire subgrade width.



**STRIKING OFF**—Paver operator winches screed forward to level off first lift. Lever on screed lifts strike-off over joints.

Concrete deposited on the sprinkled subgrade is struck off by a screed templet. Cables from a power-operated drum on the paver pass through sheaves on the outrigger arm to pull the screed ahead and level the concrete.

The screed is a two-part device. One part, the main frame, rides on wheels on the forms. The other is a strike-off plate that is fastened to the frame through a lever and link connection that can raise it to permit it to pass over preset joints.

The back of the screed is fitted with two trailing Homelite concrete vibrators set just inside the form rails. Driving the vibrators is a Homelite generator on top of the screed.

Also on the paving operation are: a Buckeye fine grader; Ransome paver for the top course; Blaw-Knox spreader and Transverse finisher; Jaeger transverse finisher; Koehring longitudinal finisher; and Sisalkraft curing paper.

Project manager for the job, scheduled for completion in December, is Jack Donovan. Project engineer is Peter Arsenault, and Charles Harris is paving superintendent.

**MARQUETTE *Star-Jet* REDI-PAC**

**CONTAINS** 1 Star-Jet Torch handle, 1 Cutting Assembly with tip, *full-size* oxygen and *full-size* acetylene gas regulators, 25 ft. double line hose, welding goggles, tip cleaner kit, torch lighter, combination wrench, Redi-Pac Tool Box.

**FEATURES** efficient "long-cone" flame from heat resistant solid copper alloy tips . . . "O" ring seals for full tip rotation without removing tips . . . large fluted aluminum swivel nut to protect "O" rings and threads . . . strong, light, sure-grip aluminum alloy handle.

**FULL SIZE REGULATORS** — nothing is "scaled down" in this complete outfit. Regulators fit all standard tank connections. Easy-to-read gauges.

**USE IT FOR** any welding, heating, brazing, soldering, or cutting job. Low operating cost. With this one outfit in its heavy duty mechanic's tool box you'll be fully equipped, no extras to buy.

**14-PIECE OUTFIT ONLY $119.95**
**(reg. $157.75 value)**

You save $37.80 over the item-by-item price for this complete outfit—the equipment that's first choice with repair and maintenance shops! So don't delay—call your MARQUETTE Distributor for your complete, modern cutting and welding outfit . . . the MARQUETTE Star-Jet Redi-Pac.

MARQUETTE

MARQUETTE MANUFACTURING CO. DIVISION OF MARQUETTE CORPORATION 307 East Hennepin Ave., Minneapolis 14, Minn.

*Circle 104 on Reader Service Card*

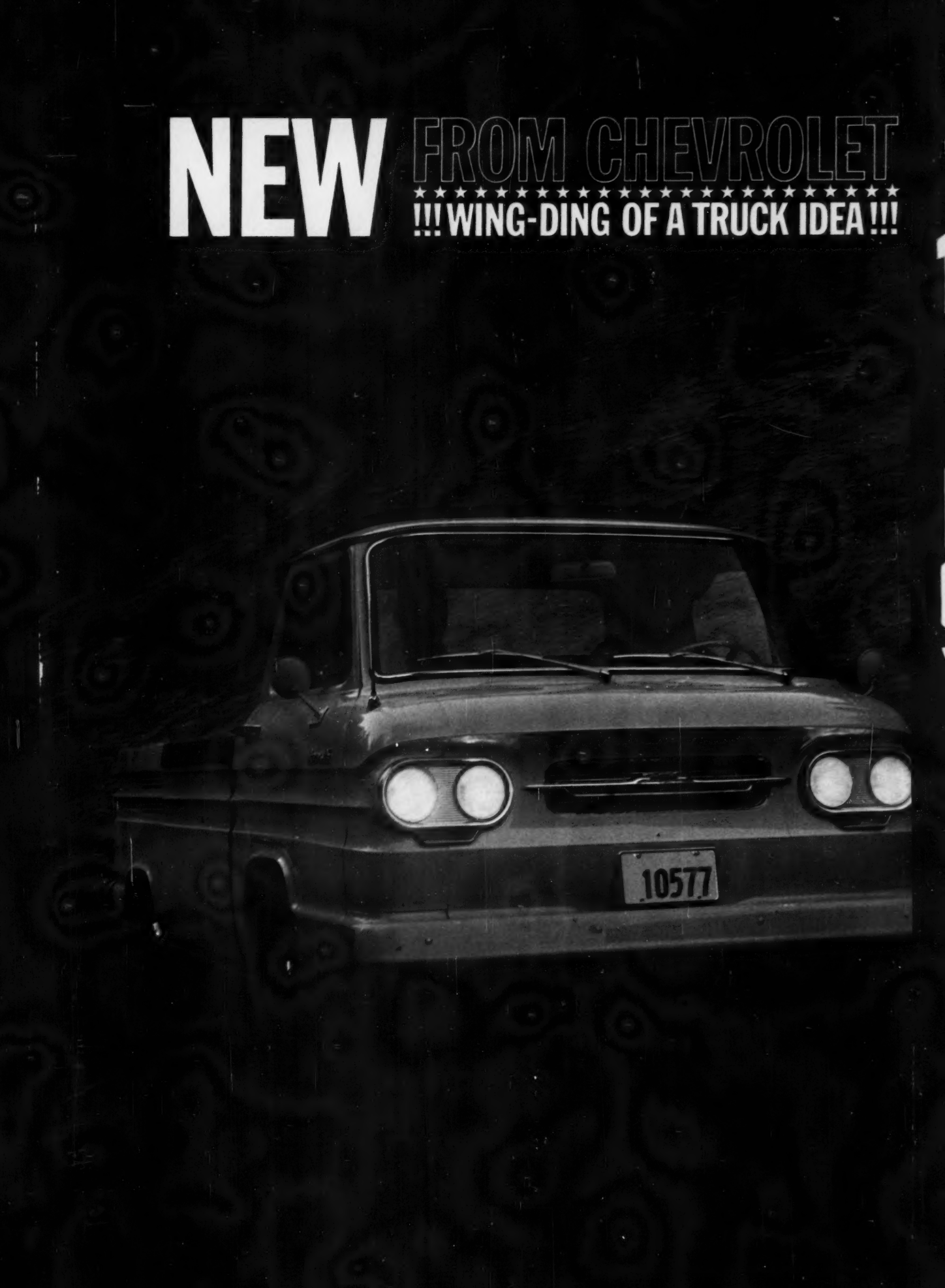

### *To Set the Record Straight*

Inadvertently, the designations for Thew-Lorain's two tractor shovels were reversed in the comparative specification chart on page 128 of our October issue. The correct designations are shown at left. Just cut them out and paste over the original first two columns of lines 85, 86.

| | THEW-LORAIN (Thew Shovel Co.) | |
|---|---|---|
| 85 | | ML-153 |
| 86 | | ML-157 |

# NEW FROM CHEVROLET

## !!! WING-DING OF A TRUCK IDEA !!!



NEW CORVAIR 95 LOADSIDE

NEW CORVAN

NEW CORVAIR 95 RAMPSIDE

# NEW !!!! CHEVROLET CORVAIR 95 TRUCKS

They're the *newest* load-pullers since horses went out of style! The most efficiently designed trucks you've ever seen, loaded with scores of new advantages, such as these:

**ECONOMY OF AN AIR-COOLED REAR ENGINE**—the aluminum Turbo-Air 6. No antifreeze to buy; no radiator repairs to worry about. Fast warm-up keeps fuel costs down. And when you need a burst of speed, this one really skedaddles!

**EASY TRACTION WHEN RUNNING EMPTY.** Snowy or mud-clogged routes pose no problem for Corvair 95. This new design puts engine weight in the rear, for deep-biting traction that gets you through.

**UNIPACK FOR FAST, EASY SERVICING.** Engine, transmission and rear axle are combined in one strong, efficient unit. A space-saving package that can be removed in minutes to speed up service, reduce downtime. Convenient access panels make routine maintenance easier.

**MORE LOAD SPACE, LESS ROAD SPACE.** With nearly 2 feet less overall length, a Corvair 95 eases into tight spots like no conventional half-tonner can. But Corvair 95's carry bigger cargoes—nearly two-thirds of the length is for load space!

**RUGGED UNITIZED BODY-FRAME CONSTRUCTION.** Tough, integral floor-frame assembly reduces truck weight, helps provide low loading height. Welded all-steel front, side and roof panels add more strength. Corvair 95's are built to last!

**LESS TRUCK WEIGHT ALLOWS MORE CARGO WEIGHT.** Corvair 95's weigh up to 1,200 lbs. less than corresponding conventional models. Yet they'll carry 1,900 lbs. of cargo!

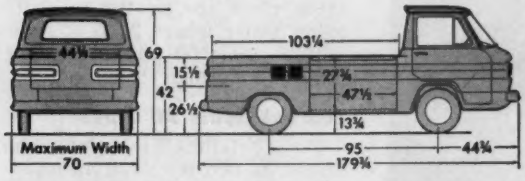
**BALANCED 50-50 WEIGHT DISTRIBUTION.** Load space located midship results in big cargo-carrying capacity. Husky 2,500-lb.-capacity front and rear suspensions carry nearly equal loads to reduce strain on chassis and tires.

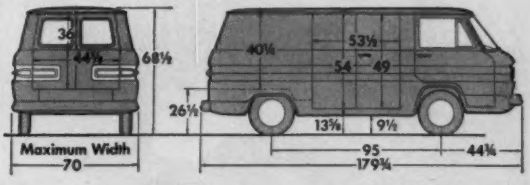
**SMOOTH INDEPENDENT 4-WHEEL SUSPENSION.** Smooth sailing on bumpy streets results from balanced friction-free coil springs at all four wheels. Independent wheel action adds to handling ease. A sturdy suspension that withstands any duty!

**SHORT WHEELBASE MANEUVERABILITY.** Corvair 95's are easiest to get around in. Turning radius (under 20 feet) is less than that of ordinary trucks. That means easier maneuvering and parking, faster hauls in congested areas.

**EASIEST TO LOAD.** Exclusive Rampside pickup side gate drops down to make cargo loading a snap. Big Corvan side doors open so wide you can load 4′ x 4′ crates with ease. And Corvair 95 rear loading heights, low as those of conventional models, will save you work every time out.

And that's not the whole story, by any means. There's rugged *truck-built* construction that shows up best when the going's worst . . . snappy styling with high, wide side panels that allow plenty of space for advertising . . . and much, much more. Visit your nearby Chevrolet dealer soon and get all the details. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

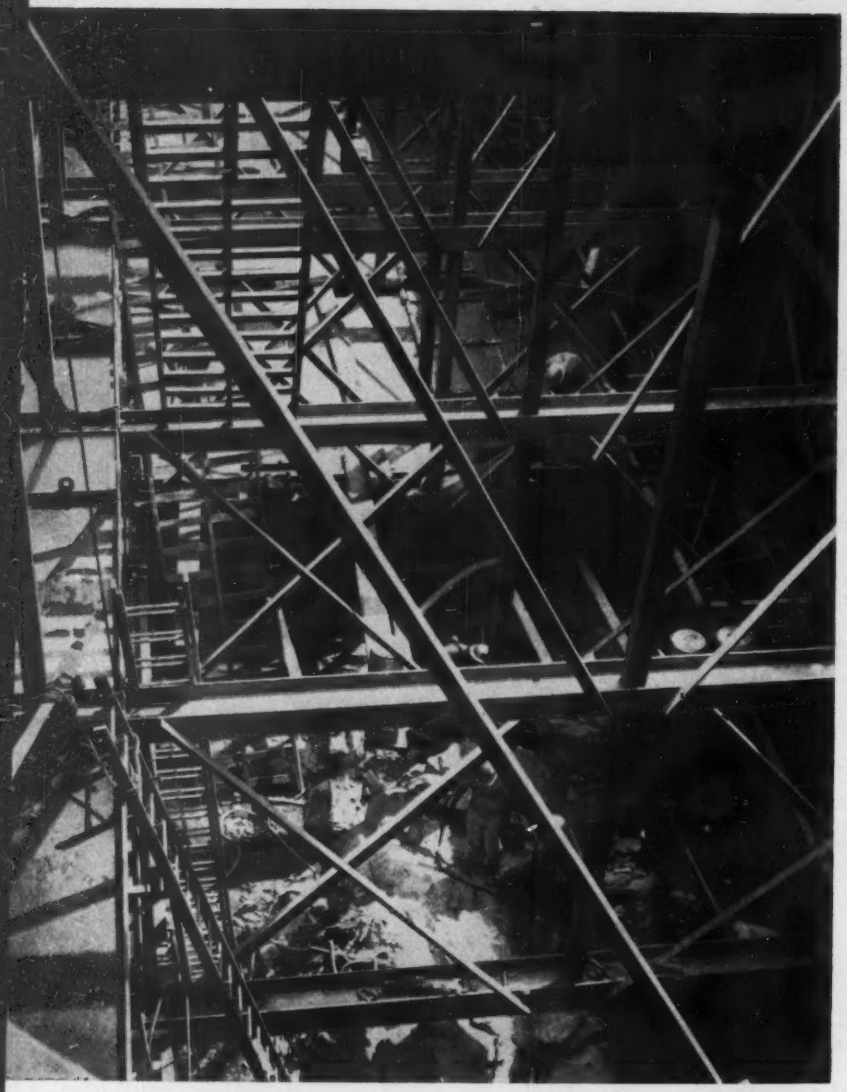


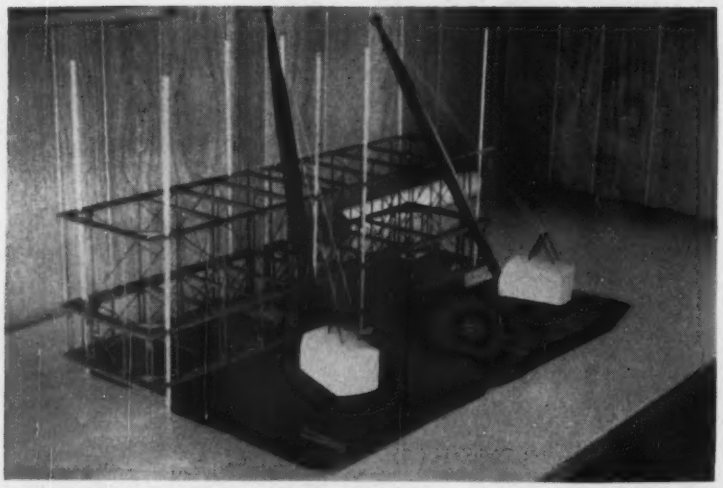




## 1961 CHEVROLET STURDI-BILT TRUCKS

CHEVROLET

*Circle 109 on Reader Service Card*





**MOCK-UP WITH MODELS**—These scale models made of balsa wood help men in charge plot, in advance, details of templet placement operation.

*A ledge of rock that didn't show up in preliminary borings required blasting before this contractor could place, in two preassembled sections, a templet frame that holds cofferdam sheeting for a deep-water pier. For piers in shallower water where mud covers bedrock, they lower bracing into place with hoists set atop pipe pile spuds as excavation within the box proceeds step by step.*

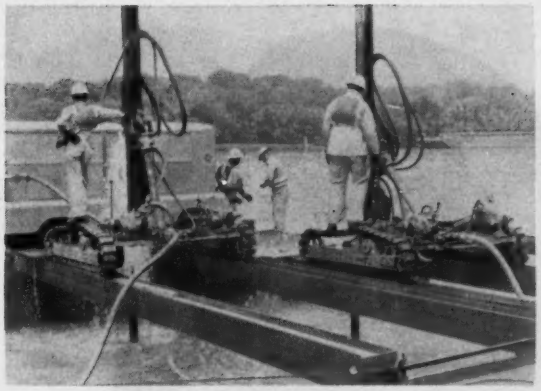
# Two Ways

THE UNEXPECTED IS THE RULE so often in construction that veteran contractors learn to take it in stride. At any rate that's how Peter Kiewit Sons' Co. of Omaha, Neb., reacted when they found, contrary to preliminary borings, that the rock forming the bed of the Potomac River was so uneven that sheetpile cofferdams could not be seated properly.

Kiewit holds a $3.2-million contract for building five piers and two abutments for the Theodore Roosevelt Memorial Bridge in Washington. The five piers are all in the river. Two of them are adjacent to the river channel on the D. C. side, where little or no material has been left covering bedrock because of the scouring action of the current. The other three piers are located in shallower water where 20 ft of river bottom material provides some seal for cofferdam sheeting.

### *Bedrock Seats All Pipes*

Plans call for all five piers to be seated on bedrock. But an undetected ledge sticking up as much as 10 ft from the river bed foiled the first attempt to place a prefabricated templet frame for the first cofferdam. It tilted over at a



**DRILLING**—Beams spanning between Flexifloat barges serve as runways for Gardner-Denver Air-Tracs drilling holes for bedrock blast.

**EXCAVATING**—Barge-mounted crane with 2½-yd clam grapples with chunks of rock as it cleans up bottom of cofferdam.

**SEALING**—Cranes with lay-down buckets place concrete seal around outside of cofferdam to plug holes between sheeting and bedrock.

# To Seat Cofferdams on Rock

rakish angle when placed on the exposed bedrock at the site of Pier 5, one of the two deep-water piers. So Kiewit had to blast out the protruding rock before resuming cofferdam construction.

### *Beams on Barges Hold Drills*

They brought in two Gardner-Denver Air-Tracs and held them over the pier site on runways made up of beams spanning between Flexifloat barges at each side. The drills bored a total of 48 holes for the shot. Spacing of the holes averaged about 3 ft. Maximum depth was 14 ft. A charge of 1,500 lb of Dupont Pelletol was sufficient for the blast. A barge-mounted crane with a 2½-yd clamshell cleaned up the loose rock, leveling a floor for placement of the cofferdam.

A complete 115-ton templet frame to guide and brace the sheeting of the 31x124-ft cofferdam had been preassembled previously in two sections. Built on a scow made up of Flexifloat units, each section consists of three rings of heavy beams tied together and braced by struts. The two bottom rings are each 36-in. WF sections spaced 12 ft vertically. The top ring is a 24-in. WF member. Total depth of the frame is 33 ft. Spacing of the horizontal struts is about 14 ft, providing plenty of working room for excavating and concreting inside the cofferdam.

One at a time, the scows carrying the templet sections were towed to the pier site. Two barge-mounted crawler cranes lifted a section from its scow and, guided by two transits, positioned it exactly. Then workmen released 14-in. pipe pile spuds that had been lashed at each corner of the frame. The spuds' pointed tips dug into the rock river bed and held the frames in place.

(Advance planning with ¼-in.-per-ft scale models helped in carrying out this tricky placement operation smoothly. The project engineer on the job had made scale models of the cranes, barges, and templet frame sections out of balsa wood. Then, in a meeting before the big day, all superintendents and foremen went over the operation in detail. In this way they found trouble spots in advance and got the feel of the operation.)

With the frame resting in final position, Kiewit placed the MZ-27 sheetpiling around the sides of the templet frames to complete the cofferdam. Then they placed a concrete seal around the outside of the cofferdam to plug the gaps between the toe of the sheeting and the uneven rock river bed. This they did without tremies by using a laydown bucket positioned by a diver. After dewatering, a crane with clamshell cleaned up the blasted rubble remaining at the bottom of the cofferdam. Crews placed 2,000 yd of concrete making up the 20x116-ft pier footing, and from then on, pier construction inside the cofferdam proceeded without hitches.

### *Second Method Licks Mud*

Construction of the cofferdam for pier 3 was complicated by material overlying bedrock. The templet frames could not be completely preassembled and placed on bedrock in one operation. Instead, Kiewit preassembled the bottom two rings of the frame, leaving the top ring resting on cribbing atop the middle ring but unconnected to it. They mounted Beebe hoists on top of each of the eight pipe pile spuds and connected the hoist lines of the Beebes to the bottom rings of the frame so they could lower the

# TAKES OFF ITS HAT TO NOBODY!

*Machine, lag, and carriage bolts.*
*All sizes. Quick delivery from stock.*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export distributor: Bethlehem Steel Export Corporation.

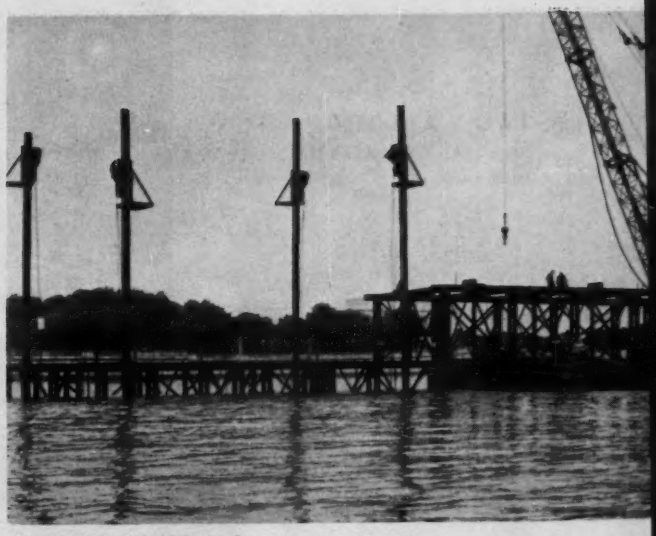
**BETHLEHEM STEEL**

BETHLEHEM STEEL

## TWO WAYS TO SEAT COFFERDAMS...

*continued*

**SPUDS ANCHOR FRAME**—Sunk into mud covering bedrock, pile spuds at each corner hold bottom rings of templet frame in place.



**AND HOLD HOISTS**—Beebe hoists atop spuds will lower bracing as excavation proceeds to bedrock within the box.

frame into final position as excavation progressed.

Again they floated the frame into place in two sections, with the two barge-mounted cranes handling the lifts. They dropped the spuds to anchor the frames in position and proceeded to drive sheeting around the sides. A McKiernan-Terry 9-B-3 hammer powered by two 600-cfm compressors drove the L. B. Foster sheeting.

When all sheeting had been driven to bedrock, a crane fitted with a 2½-yd clamshell began excavating the river bottom material inside. Crews lowered the two bottom rings of the templet frame by means of the Beebe hoists on the spuds as excavation proceeded. When they reached bedrock, they fixed the two bottom rings in a level position and welded the top ring to the sheeting enclosing the box.

### *Lip Holds Toe of Sheeting*

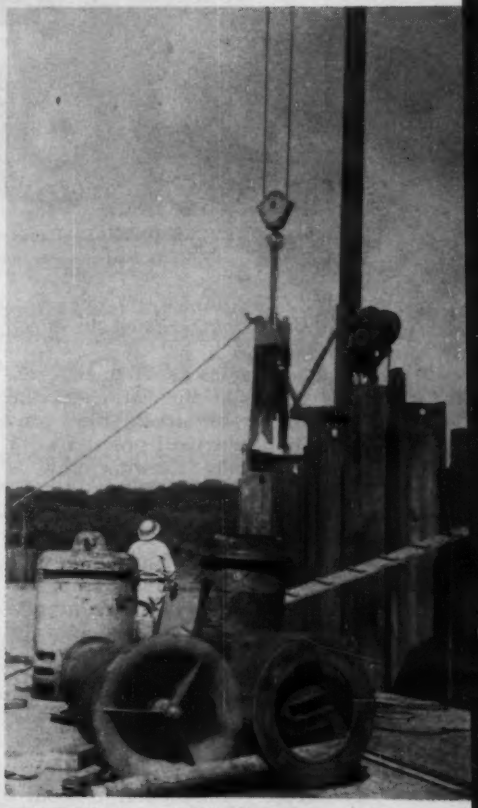
To hold the toe of the sheeting against the inward pressure caused by water and the river bottom material, they placed a concrete lip inside the cofferdam at one corner. This precaution was necessary here because the bottom ring of the templet frame was fully 10 ft above the lowest portion of the bedrock, which fell off steeply on one side and caused excessive cantilever in the sheeting. A diver drilled holes in the bedrock for dowels to anchor the concrete lip to the bedrock. Then he placed a 3-ft-high sandbag wall about 3 ft in from the toe of the sheeting. Finally, they poured concrete in this form with a tremie pipe to complete the concrete lip.

### *Cofferdam Almost Blows*

Twice they tried unsucessfully to dewater the cofferdam. The contractor had hoped that the 20 ft of material covering bedrock would provide a sufficient seal, but each time mud and water boiled up from beneath the sheeting. Here again the irregularity of the bedrock caused poor seating of the sheeting. This time, to seal the cofferdam on the outside, they jetted a grout pipe down through the mud to bedrock and pumped concrete through it to build up a seal.

Twin sections of 4-in. pipe strapped together did the trick. One pipe served as a jet, with water supplied by a 10-in. Jaeger pump. The other carried the grout that made the seal. They sank the twin pipes at about 1½-ft centers along the sides of the cofferdam with a crane. Holding the jet in place at the bottom, they formed a bulb or pocket for the grout to fill. These overlapping

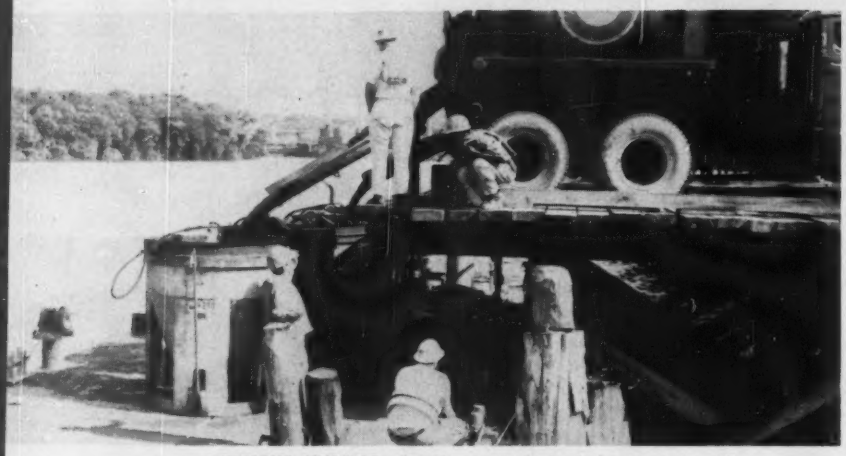
*continued on next page*



**SHEETING**—Crane fitted with McKiernan-Terry 9-B-3 hammer drives cofferdam sheeting. Kiewit will reuse material used in first two pier cofferdams for three other piers.

## TWO WAYS TO SEAT COFFERDAMS . . .
*continued*

**DIVER DESCENDS**—Along side of cofferdam where sheeting is unsupported by bracing, diver will drill dowel holes for concrete lip to hold toe.



**TRUCKS UNLOAD**—Transit-mix trucks backed out on riverside ramp fill six 2-yd concrete buckets that ferry will deliver to pier.

bulbs of grout created an effective seal.

After placing a 6-ft-thick leveling course at the bottom of the dewatered cofferdam, pier construction here will proceed as at Pier 5, where Kiewit's crew is now forming a 20x116-ft pier on top of a 20-ft-thick footing. They use large 10x13½-ft form panels to keep hand labor inside the cofferdam to a minimum.

Later they will place granite blocks that face the portion of the pier extending above water. The granite blocks will serve as forms for the pier cap. The blocks vary in size from about 3x6 to 4x8 ft and vary in thickness from 12 to 16 in. Kiewit will limit lifts in concreting this section to about 3 ft in order to eliminate ties. The blocks are delivered to the job precut to fit. Dowels anchor each course to the concrete backing them up.

Transit-mix trucks supply all concrete for the pours. A diesel-powered ferry with six concrete buckets shuttles back and forth between a loading dock and the piers. One of several barge-mounted cranes handles concrete placement. A prefabricated 10x10-ft hopper with attached pipe tremie resting on the struts at the top of each cofferdam distributes the concrete in the forms.

This means Kiewit has to provide only enough material for two pier cofferdams, instead of five. They will reuse the cofferdam now in place at Pier 3 for the two other piers in shallow water. Similarly, the cofferdam installed for pier 5 will be reused again for the other deep-water pier. Some of the struts and bracing members will be lost in the pier concrete, of course, but the sheeting and the heavy rings of the templet frames will see additional service. To expedite work, Kiewit is installing additional cofferdams for each of the two abutments.

### *Piles Hold Abutments*

Work is progressing at a steady pace on the abutments at either end of the bridge. These massive concrete structures will be supported by 14-in. Republic pipe piles. A rig fitted with a McKiernan-Terry 10-B-3 hammer powered by a 900-cfm Gardner-Denver compressor is driving a total of 21,000 ft of the piles for the two abutments. Depth of the piles so far averages about 47 ft. They are designed to carry 45 tons, but tests show bearing in bedrock as high as 100 tons.

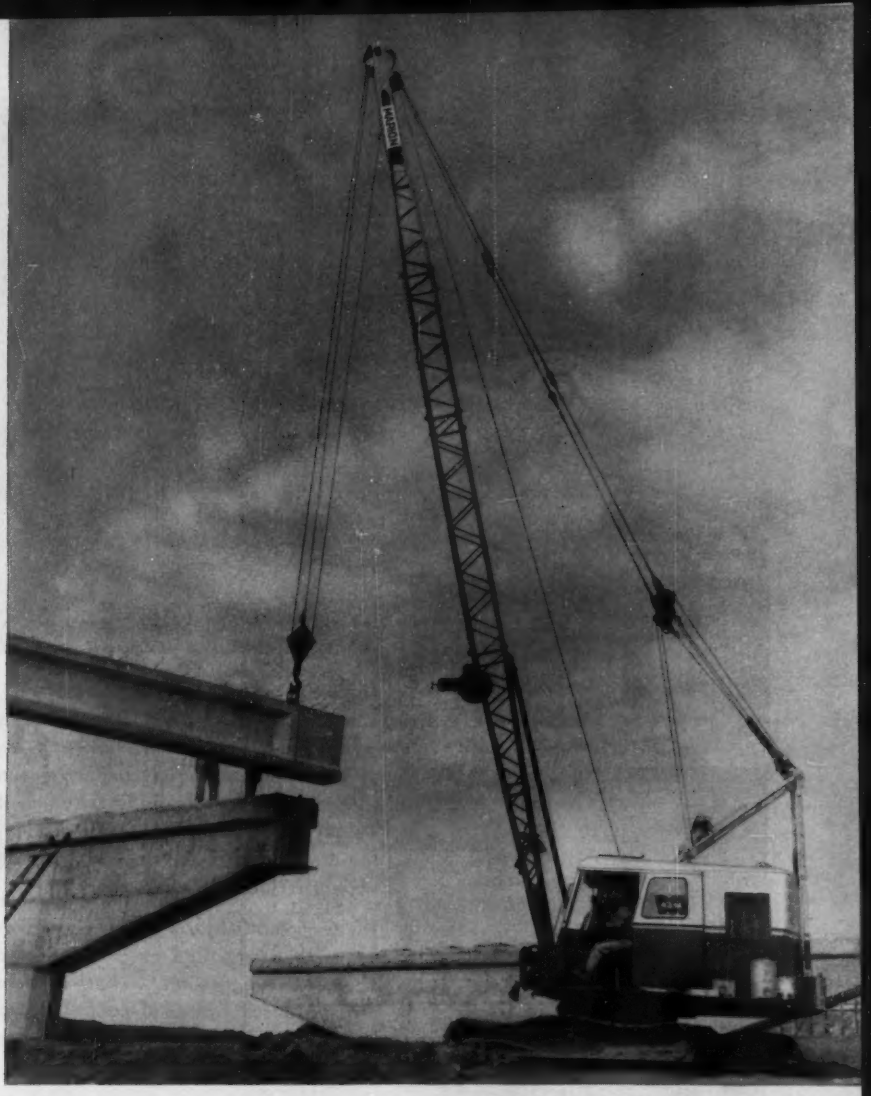
Kiewit loaded the job with enough rigs to insure that no operation would be stalled. They include three barge-mounted cranes: a Manitowoc 3900, a Bucyrus-Erie 71-B and a P&H 1055. All these, together with a Northwest No. 6 available for utility work, are crawler mounted. Also on hand are two truck cranes: a Koehring 304 with a capacity of 25 tons and a 40-ton Bay City.

The battery of pumps used in dewatering the cofferdams consists of two 10-in. Gorman-Rupps, an 8-in. Flygt, and a 10-in. Jaeger. A 20-in. Fairbanks Morse deepwell turbine unit pumped more than 20,000 gal in about 1½ hr in the first attempt at dewatering the cofferdam at pier No. 3. Then Kiewit switched to the battery of smaller pumps. An array of 3-in. Flygt pumps comes in handy for cleaning up puddles.

### *Men on the Job*

Project manager in charge for Kiewit at the site is Dick Lukens, Jr. Project engineer is Preston Stokes. Field superintendents are Bob Saulsbury and his brother Ace. Resident engineer supervising construction for the District of Columbia Dept. of Highways is B. J. O'Donnell.

# Pre-stressed concrete or steel . . . . You can't find a better BRIDGE BUILDER



27-ton crane muscles, supplemented by dragline and clamshell help as needed, made this Marion 43-M a triple-threat machine on Oklahoma's largest bridge using prestressed concrete beams.

This Marion wears 36-inch shoes on 15-foot crawler belts that shrug at soft footing, even when handling heavy loads. Its torque converter and foot accelerator let the operator inch big loads into place with ease, confidence and accuracy.

The availability of power load lowering, third drum and independent propel permits owners to custom-select outstanding performance features suited to their job needs.

Get the rest of the story about the 43-M's bridge-building exploits from your nearest Marion Distributor.

*You get* MORE WITH MARION

**MARION POWER SHOVEL CO. — MARION, OHIO**

*A Division of Universal Marion Corporation*

*Circle 115 on Reader Service Card*

# SAVE MONEY
## with the Galion Model 503 Grader

Street Maintenance in **MISSOURI**

Road Maintenance in **OHIO**

Spreading Blacktop in **WISCONSIN**

Grading Housing Site in **WASHINGTON**

Grading Parking Area in **TEXAS**

The model 503 is economical in first cost, economical to operate, economical to maintain—and small enough to work efficiently in areas too confined for a large grader. Yet the 503 has sufficient weight and power—with "big grader" features and attachments—to do a wide variety of jobs with speed and profit.

The Galion 503 Motor Grader is available with a gasoline or diesel 58 hp engine. It has positive 4-wheel tandem drive and full hydraulic control. Extra large positive traction tires are same size front and rear.

Attachments for the model 503 include front-positioned hydraulic scarifier . . . booster power steering . . . hydraulic shiftable moldboard . . . leaning front wheels . . . hydraulic circle turn . . . stand-up height removable cab . . . snow plow . . . bulldozer . . . windrow eliminator . . . and creeper transmission (installed at the factory).

Backfilling Utility Line in **COLORADO**

Alley Maintenance in **MAINE**

You will invariably find owners and users (whether contractors or public officials) happy with the performance of the GALION 503 Motor Grader.

**THE GALION IRON WORKS & MFG. CO.**
General and Export Offices—Galion, Ohio, U.S.A.
Cable Address—GALIONIRON, Galion, Ohio

GALION® ESTABLISHED 1907
**MOTOR GRADERS • ROLLERS**
**VIBRATORY COMPACTORS • PNEUMATIC TIRE ROLLERS**

THE GALION IRON WORKS & MFG. CO. Date_____
Dept. CM-110, Galion, Ohio

Please send me complete information on the Galion Model 503 Motor Grader.

Name_____ Title_____

Firm or Dept. _____

Street_____ City_____ State_____

*Circle 116 on Reader Service Card*

**LOADING**—To save tires from being slashed to ribbons on razor-sharp coral, operator of Caterpillar DW21 merely maintains momentum as power-shift D8 push-loads scraper.

# Scrapers Rehandle Hard Coral

*Handling blasted coral rock twice is par for the course on this job. First, draglines stockpile the water-soaked shot rock. After it dries, scrapers load and haul it to the fills.*

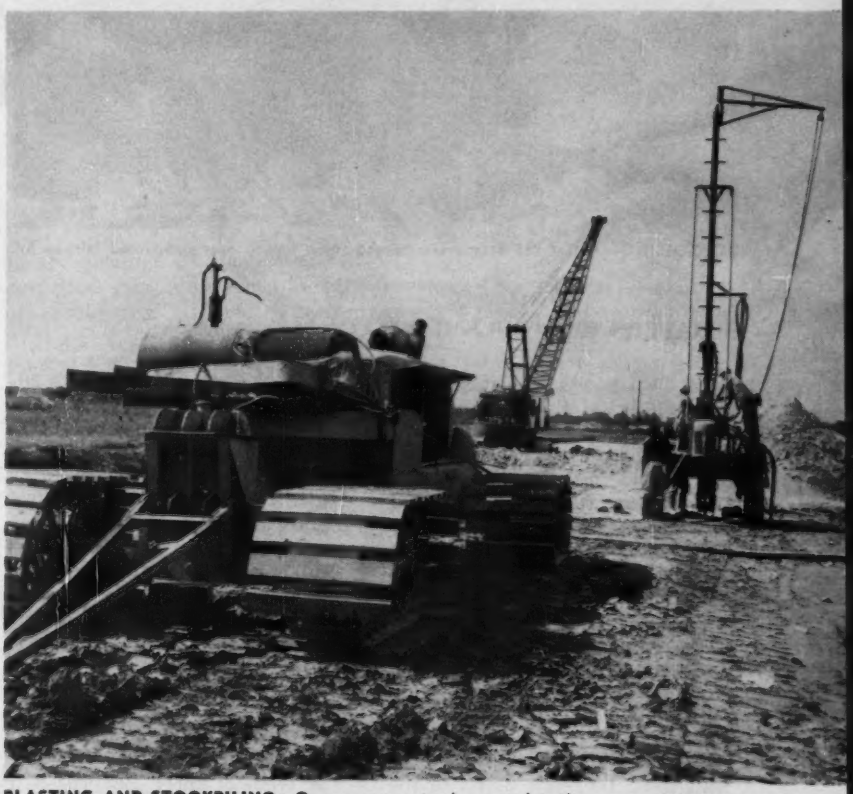
GRADING A GOLF COURSE may sound like a holiday to veteran earthmovers used to big highway or dam jobs, but Troup Construction Co. of Coral Gables, Fla., know better than to consider such a job a snap.

For instance, in building a new course for a country club near Miami, they have their hands full handling a hard coral rock that is as stubborn as the most die-hard weekend golfer. The pesky coral resists ripping; most of it has to be blasted. And because the tough but porous rock is saturated with water, they have to rehandle it after initial excavation.

### *Draglines Start Cycle*

First, draglines excavate the blasted rock and stockpile it in strips. Then, when the excess water has run off, scrapers load the rock and haul it to fill areas. It sounds round-about, perhaps, but Troup figured it would have been uneconomical to load the scrapers directly with the draglines. That way the scrapers would have been hauling a lot of water instead of a full payload.

The $450,000-job involves moving about 500,000 yd of earth and



**BLASTING AND STOCKPILING**—Compressor on track-mounted trailer powers drill that punches blast holes in hard coral. Dragline in background excavates the wet shot rock.

**SPREADING**—Scraper dumps load of rocky material as dozer stands by to spread the fill.

**COMPACTING**—Pulled by a Cat DW10 wheel tractor, an Athey grid roller compacts fill.

**TOPSOILING**—A Cat 955 Traxcavator spreads marl topsoil over compacted fairway fill.

## SCRAPERS REHANDLE HARD CORAL *continued*

rock. Two ponds, one measuring about 175x500 ft and the other 120x800 ft, provide the bulk of the material. A serpentine canal that meanders through the course provides the rest of the fill. The canal varies in width from 75 to 120 ft and in depth from 16 to 20 ft.

After opening up these borrow areas by stripping off a foot or so of marl topsoil, Troup ripped up the partially decomposed coral underneath with a home-made rock plow. Gouging out about a 3-in.-thick layer at a time with its 12 teeth, this ripper works well until they get down to the water table.

To blast the hard coral below that level, Troup first punches 20-ft-deep holes with an Ingersoll-Rand X-71 rock drill fitted on an Oliver OC-3 tractor. Mounted on a 25-ft tower, the drill drives the 2½-in. bits at a fast clip, completing an average 10 holes an hour. An Ingersoll-Rand 600-ft compressor mounted on an Athey wagon supplies air.

Hole pattern ranges from 6x7 to 6x8 ft, depending on coral hardness. The blasting crew tube-loads the holes with 10 to 15 lb of Atlas Giant 40% gel powder and then touches off the charge with electric caps.

A team of three Bucyrus-Erie draglines, a 38-B, a 51-B, and a 54-B, with 2 to 3-yd buckets excavates the blasted rock. They deposit the material in stockpiles on each side of the excavation. A Caterpillar D8 dozer levels the piles. It pulls a Bros grid roller, and the combination flattens the material and breaks up over-size chunks. The roller and dozer also help in squeezing some of the excess moisture out of the rock.

When the stockpiled material has dried out, one of three Caterpillar DW21's loads it for removal to the scattered fill areas. Each of these scrapers averages 1,500 yd per 10-hr day with hauls ranging from 1,000 to 2,000 ft.

### *Coral is Razor-Sharp*

A Caterpillar D8H push-loads the scrapers. The DW21's do not assist in the loading, they merely maintain momentum. In this way the operator avoids spinning the wheels of his rig on the razor-sharp coral, which could easily cut the tires to ribbons.

Troup prefers the power-shift model push-dozer for this work rather than a torque convertor model because its split-second shifting mechanism enables the operator to shift up without losing momentum when boosting a scraper out of the loading strip. It also permits him to back up to the loading point faster.

Besides the draglines and scrapers, earthmoving equipment on the job includes a Caterpillar D6 assigned the job of shaping and grading tees and greens, and a Cat 955 Traxcavator that digs out sand traps. A DW10 with a Hyster grid roller handles compaction of the fills.

### *It's a Spot-fill Operation*

There is a conspicuous lack of a motor grader on the job. Because this is essentially a spot-fill operation, the contractor feels that maintaining haul roads with a grader would be a waste of time. Instead, scraper operators keep haul roads passable by dragging the bowl over rough spots on the return trips.

Earthmoving is scheduled for completion this month. Soon it will be the golfer's turn to sweat over the hazards of the course. Troup Superintendent T. F. (Slim) Bates will gladly leave trying out the course to them—he's not a golfer.

# STEEL CORD TIRES CURB DOWNTIME

Off-the-road tires made with Bekaert Steel Wire Cord have up to 10 times stronger sidewalls for added resistance to blowouts, impact breaks, cutting, chipping and abrasion failures!

Records from construction, logging and drilling firms prove that tires made with Bekaert Steel Wire Cord deliver thousands of hours more trouble-free service.

Steel cord tires are fortified with 4 plies of 400,000 psi high tensile carbon steel wire from bead to bead. With thinner, stronger, sidewalls they run cooler. These rugged 4-ply tires have a double extra-ply rating—solid proof of strength and high load capacity.

Put steel cord tires on your graders, earth movers and other off-the-road equipment to reduce profit-eating downtime and lower your costs—no matter how heavy the loads or how rugged the job. Infrequent repairs are easy with new, technically improved steel cord tires.

One-ply highway truck tires made with Bekaert Steel Wire Cord give 2½ times more original tread mileage than other tires . . . cost as little as a "mill per mile"!

Get more hours of service and many more retreads by specifying tires made with Bekaert Steel Wire Cord. For further information, including typical examples of user field experience, write for free data booklet:

PLEASE SEND ME A COPY OF YOUR BOOKLET

**Bekaert** *Steel Wire Corporation*

665 MADISON AVE., NEW YORK 21, NEW YORK, DEPT. CM

NAME_____ COMPANY_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

BEKAERT STEEL CORD, ZWEVEGEM, BELGIUM Among Europe's Foremost Steel Wire Producers Since 1880

*Circle 119 on Reader Service Card*

**DIFFICULT SITE**—Court on top three floors of seven-story bank building is surrounded on all sides. Monorail system carries steel and concrete through penthouse, across the roof to site.

# Monorail Materials Carrier Reaches into Interior Court

*The trickiest phase of filling in a court in the American National Bank Building in Nashville is getting materials into the enclosed court. The contractor does it neatly with a home-made monorail and hoist system.*

A CONTRACTOR-BUILT monorail and traveling hoist are doing the job of two derricks on an unusual building job in Nashville, Tenn.

Foster & Creighton Co., of Nashville, is the contractor. They have a contract to build an extension of about 5,000 sq ft on top of the seven-story American National Bank Bldg. About half this new area will be provided by filling in an interior court in the top three floors of the building. The other half of the extension will consist of a completely new eighth floor covering the whole top of the structure.

Filling in the court is the unusual part of the job. All the structural steel, as well as the concrete for the floor slabs, must be lifted up the outside of the building, carried across the roof, and lowered into the court.

The obvious way to do this would have been to install two derricks on the roof. But the monorail system can do just about everything the derricks could do, at comparable cost. And the monorail has one extra advantage

—the main section of it will be left in place permanently to handle air conditioning equipment and other heavy lifts on the roof.

### *Interior Court*

The court appears only in the top three floors of the building—that is, the fifth, sixth, and seventh floors. These floors are U-shaped in plan because the court is at one edge of the structure.

That edge butts against another building. The court is roughly in the middle of the two buildings, bounded on three sides by the bank building and on the fourth side by its neighbor. The second building is four stories high; its roof is at the same level as the floor of the court.

In horzontal dimensions, the court is 36 ft deep and 45 ft along the side of the building.

### *Home-Made Monorail*

The monorail is 72 ft long. It spans 45 ft across one arm of the U-shaped roof and cantilevers over the outside edge of the building and over the court. A traveling hoist moves back and forth along the rail to handle construction materials.

The rail is a 10-in., 25.4-lb I-beam. The first 9-ft section extends unsupported out over the edge of the building. At the outside edge of the building, the rail passes through a 13-ft-wide penthouse. It is fastened at several points to the steel roof framing of this structure.

From the penthouse to the edge of the court, the monorail spans a distance of 32 ft. It is supported by one steel inverted U-frame bent at mid-point and a second bent at the edge of the court. It then extends 18 ft farther over the court.

At the second frame, where the rail is subjected to the greatest bending stress, there is additional support. A length of channel has been welded to the top flange of the I-beam. And a short mast built on top of the U-frame bent carries guy wires forward and back to support points on the rail.

The outside door of the penthouse was a double door and was left intact. But the court-side door had only a single opening, which had to be converted to a double to allow reasonable clearance for the hoist and its load.

### *Improvised Hoist*

The main problem in designing the hoist was to obtain a rig with enough cable to reach 120 ft from roof level to the ground. Foster & Creighton couldn't find one on the market of the size they wanted that also had a large enough drum. So they made one of their own by mounting an electric car puller underneath a pair of trolleys.

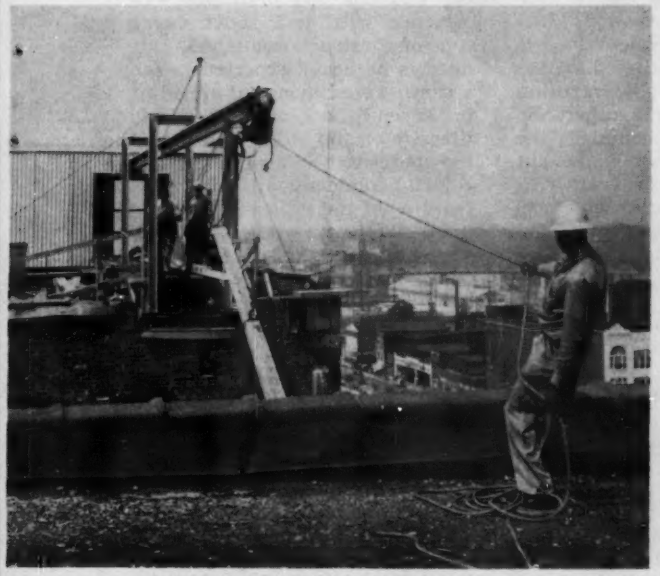
The puller is a Model EL Power Puller made by the Sasgen Derrick Co., of Chicago. It runs on 220 or 440-v power, has a hoist speed of 55 fpm, and a capacity of 2,000 lb.

The drum is capable of handling 200 ft of ¼-in. line, which the manufacturer considered adequate for the Nashville job. Foster & Creighton didn't need 200 ft of cable, so they added an extra safety factor by winding the drum with 150 ft of 5/16-in. non-rotating cable.

They mounted the rig upside-down on two 2-ton Coffing Hoist Trollies made by Duff-Norton Co. The maximum load carried by the hoist is 1,800 lb. The hoist itself weighs 600 lb. So the 4,000-lb trolley capacity is enough to handle these loads plus impact and unbalanced distribution.

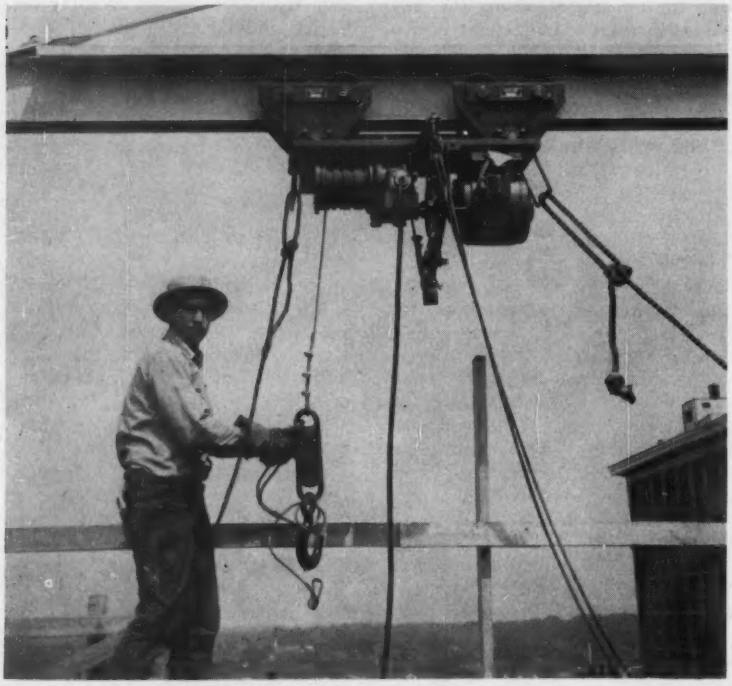
The heaviest steel beam carried by the hoist weighs 1,800 lb. The heaviest concrete load weighs about the same; it consists of a 450-lb bucket plus 1,300 lb of concrete.

The Model EL puller is operated by a manual switch. Because the rig has to be operated by a man on the roof about 18 ft from the machine, Foster & Creighton would have preferred an electric



**HORIZONTAL TRAVEL**—Man on opposite roof pulls the hoist along the monorail by hand. One of the doors in the penthouse had to be enlarged to provide room for loads to pass through. Monorail is 72 ft. long.

**VERTICAL TRAVEL**—Hoist drops reinforcing bars to the crew working in the court. Vertical travel speed is 55 fpm. Most material is easy to handle, but getting long steel members through penthouse is a bit tricky.



**MODIFIED CAR PULLER**—Contractor built hoist from an electric car puller and two 2-ton trollies. Wheel and pulleys at switch are rigged to provide remote control.

switch. But they were able to rig up the manual switch for remote control so that it works just as well.

They mounted a steel half-wheel under the switch and rigged a rope from the switch through pulleys on the wheel to the operator on the roof. The system includes a weight in the center of the wheel. If the operator loses his grip on the rope for any reason, the weight will pull the switch to put the motor into neutral and automatically apply the brake.

### *Threading a Needle*

Most of the lifting operations are routine. But hauling up the longest (36 ft) steel beams is tricky because the monorail extends only 9 ft beyond the door of the penthouse. And the door opening is only 6x7 ft.

The beam is lifted most of the way in a level position. As it nears the top, crews on the ground tilt one end up by means of guide ropes. They thread the high end through the door and keep it pointing along the monorail as the hoist gradually lifts the beam up into a horizontal position again. A wire-connected intercom system keeps the men on the ground in touch with the crews on the roof. The hoist is pulled along the monorail by hand.

### *Unusual Construction*

Foster & Creighton has to complete the steel work in the court up to the roof level before they can work on the interior. To connect floors and services to the existing building, they have to cut through the walls, exposing the exterior to the weather. So they first have to complete the new roof and exterior walls, and completely waterproof both. In effect they will build the steel frame from the bottom up, then work from the top down.

### *Main Beams*

To connect the main steel members, they cut through the masonry walls of the existing building to reach columns. The main beams in the new structure are connected at their interior ends to existing columns but are not structurally supported by them. They are supported at two points by the columns underneath, which are being extended upward. The interior ends of the new beams are cantilevered from these columns to their end connections.

This system was designed to impose the minimum possible loading on the existing structure. All steel connections are bolted to reduce noise, especially around radio station WKDA on the seventh floor.

The floor will be supported on steel joists anchored to a continuous support angle at the existing wall. (These joists are being erected along with the main steel structure to provide working platforms, although they are not needed for the permanent floor until later.) The floor slabs will be of lightweight concrete to reduce weight on the existing structure. Each slab will require 16 cu yd of concrete. Foster & Creighton plans to haul it in a ½-yd bucket via the monorail, then distribute it to the pouring areas in buggies.

### *Top Supervision*

For its size, this job is getting some of the best supervision and consulting advice in the country. It just so happens that the executive offices of Foster & Creighton Co. are on the seventh floor of the American Bank Building, directly overlooking the court.

In one office is Wilbur Creighton, Sr., for many years president of the company and now a company consultant. Mr. Creighton has seen construction develop from the mule age to the atomic age and has had first-hand experience with just about every type of construction method. But he says he never expected to see a cantilevered monorail aimed at his seventh-floor window. He is literally on top of every phase of the operation and his interest and colorful comments are one of the features of the project.

In the next office, Wilbur Creighton, Jr., the present president of the company, has an equally good view. And, when he can spare the time, he can watch every bolt going into place.

W. B. Seagraves, formerly chief estimator for the company and now a consultant, played a big part in designing the monorail system. He, too, keeps in close touch with the operation from his seventh floor office.

L. E. Harris is field superintendent for Foster & Creighton. Ross Randolf is erection foreman for Nashville Bridge Co., who are supplying the structural steel for the job.

# BRINGS COMPRESSED AIR ANYWHERE UNDER ITS OWN POWER!

Here's a self-propelled air compressor that eliminates *all* the dead time spent by conventional compressors waiting to be towed somewhere!

The Tractair is a 42-hp tractor and a 125-cfm air compressor. It brings air power to sites you'd fear to tread with truck-towed compressors. You can park it in a ditch or on a steep slope, attach the hose, and start drilling. When finished, the operator drives it to the next job — without waiting for a tow truck or men to jockey it into position. You can drive up close to the work, too, which means shorter hose . . . less hose damage . . . and full 125 cfm power at the tool.

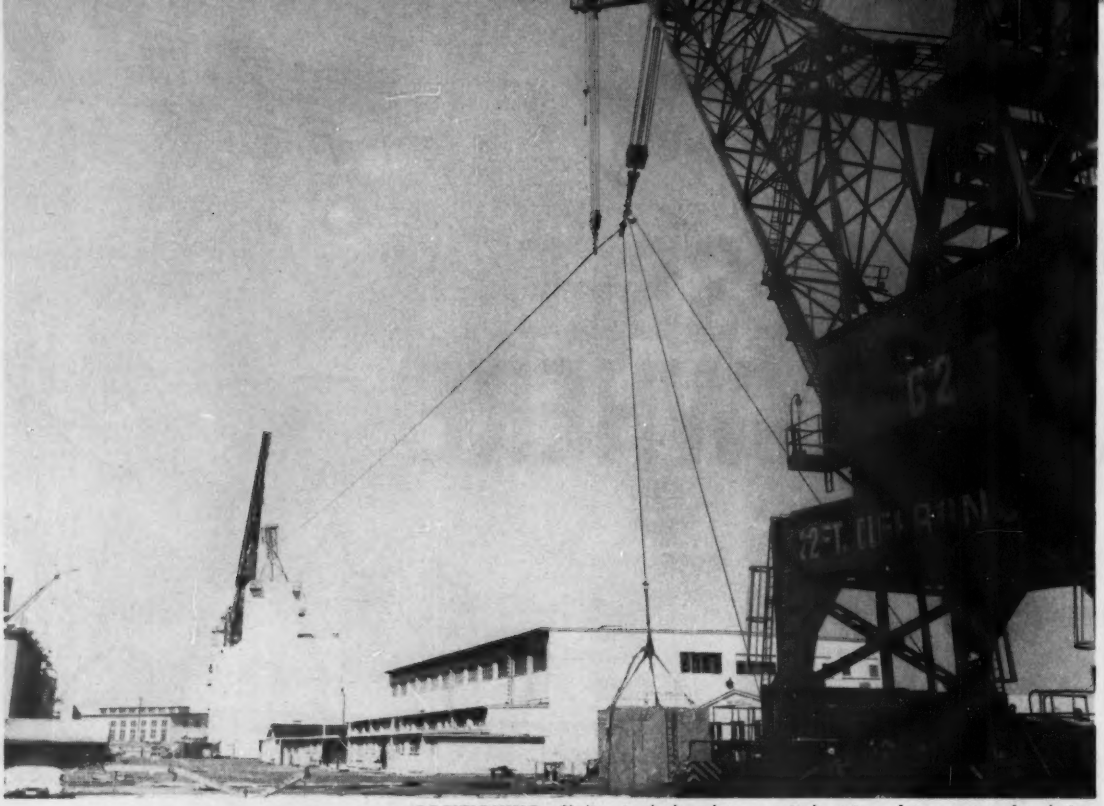
The improved Tractair offers greater efficiency and fuel economy. It's designed for operator convenience . . . all-weather dependability . . . and the easiest servicing in the field. Add available attachments and you have a money-saving self-propelled air-plant for year-around construction and maintenance work.

*Ask your Le Roi distributor for a free demonstration. Or write to Le Roi Division, Westinghouse Air Brake Co., Sidney, Ohio.*

## LE ROI TRACTAIR® AIR COMPRESSORS

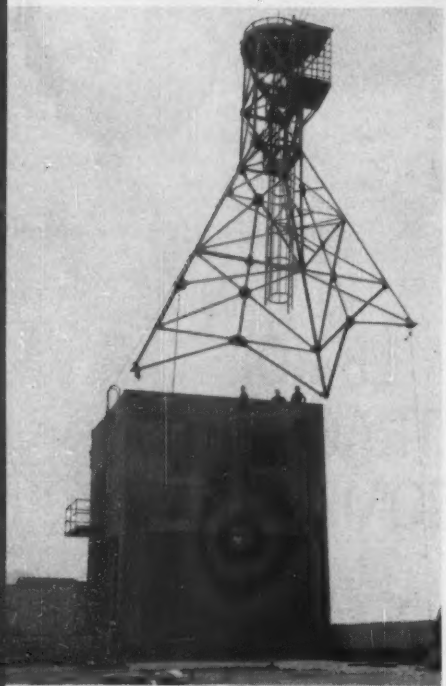
T-61

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS



**POSITIONING**—Skyline is slackened to permit lowering of tower atop foundation. Counterweight container holding 50 tons of water is at base of anchor crane (right).

# Skyline Rig Places Radar Tower



**THREE POINT LANDING**—Being guided onto base, 45-ft-high 7-ton tower is shackled to trolley block riding skyline.

HOW WOULD YOU go about placing a 45-ft-high, 7-ton radar tower atop a 90-ft-high building in an area that could not be reached by crane? Confronted with this dilemma, San Francisco Naval Shipyard personnel came up with a modified version of a slack skyline, usually used by timbermen to handle giant trees in logging operations.

Two gantry cranes, spaced 800 ft apart beyond the ends of the building, supported the skyline. At one end, the radar tower was hoisted high in the air and allowed to slide down the line above the roof. When it was over its foundation, the tower was lowered into place by slackening the line.

The radar tower's foundation was on top of a 3-story concrete tower projecting up from the roof on the building's southwest corner. The problem was how to place the radar tower there. The skyline technique was used because there was no access to that corner of the building.

First, a 49-ton gantry crane with a 178-ft boom was spotted facing the north end of the building. It hoisted the radar tower from the ground to the roof.

Then, a 56-ton anchor crane with a 158-ft boom was positioned 800 ft away, facing the south end of the building. The skyline ran from the load-line hook on the north crane, through a sheave on the anchor crane's hook, to a 50-ton counterweight at the base. A trolley block, to which the radar tower was shackled, rode on the skyline. And the north crane's whipline was fastened to the 45-ft-high tower as a holdback.

To set the tower, the north crane took a strain on its load line. This pulled the skyline taut and at the same time lifted the tower, snubbed by the whipline, up from the roof. Slackening the whip allowed the trolley and attached tower to slide down the skyline until they were above final position. Finally, slackening the skyline itself landed the tower in place, 90 ft above ground.

Shipyard personnel designed, fabricated, and erected the radar tower. Bob Cherrigan supervised the crane rigging and tower placement.

When this photograph was taken, 8,000 yards of right-of-way had been cleared of trees, and the roadbed was being prepared for surfacing.

# "Sinclair Helped Cut Maintenance Costs On Every Mile of Our Northway Section"

says J. Hanna, Superintendent,
D. A. Collins Construction Company

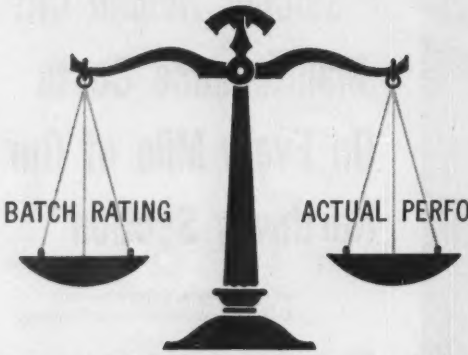
The Northway, another link in the nation's grid of superhighways, connects the New York State Thruway with the Canadian border. Mr. Hanna says, "Our heavy-duty equipment took the toughest kind of punishment on this project. Work ranged from ripping out trees to building bridges. Yet our maintenance costs were far below what we anticipated. Much of the credit must go to Sinclair's service and their high quality fuels and lubricants. They kept our equipment operating at peak efficiency . . . *on schedule.* These are reasons enough why we use Sinclair Products exclusively."

If you haven't discovered the cost-cutting possibilities of Sinclair services and products, see your local Sinclair Supplier — or write Sinclair Refining Company, Contractor Sales Dept., 600 Fifth Avenue, New York 20, N. Y.

**Sinclair**
**Fuels and Lubricants**

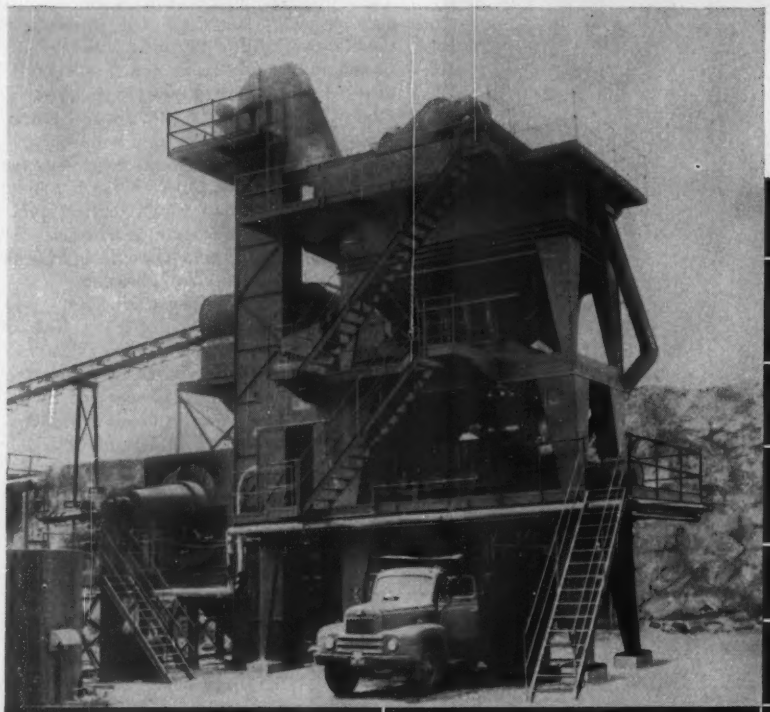
Mr. Hanna reports, "The portable trailer tanks Sinclair loaned to us contributed greatly to the speed and efficiency on our section. We were able to refuel on the job . . . **fast,** and keep our equipment working **full time.**"

*Circle* 125 *on Reader Service Card*




# A BALANCED 8000 lb. Bituminous Batch Plant?

*We think so, and invite you to check some of the features of our T-80 Plant*



- 112" dia. x 40' long dryer with automatic 750 GPH low pressure oil burner
- 3½ deck or 4½ deck 5' x 16' gradation screen with vibration dampers and reversing switch on stop control
- 80 ton hot bin (120 tons optional), 4 or 5 compartment, as required
- 450 GPM jacketed A/C pump, with by-pass, strainer, and relief valve assembly
- Positive fugitive dust control and hot bin ventilation with separate exhauster
- Jacketed twin shaft pugmill mixer, 83 cu. ft. vol. below center line of shafts
- 18" x 10" A/C buckets @ 12" centers on all steel chain
- Air compressor permanently mounted in mixing tower framing
- Stairways to all platforms and walkways on mixing tower
- Factory installed wiring, with control house built as an integral part of mixing tower structure
- Automatic weighing and remote control available, all plants

**H & B offers plants BALANCED for 80 BATCH-PER-HOUR PRODUCTION, in sizes through 12,000 lb. batch rating**

H&B ESTABLISHED 1867

**TOWER TYPE BATCH PLANTS in 8 sizes**
**MOBILE TYPE BATCH PLANTS in 6 sizes**
**BASE STABILIZER PLANTS in 2 sizes**
**MOTO-PAVER, the travelling combination Mixer and Paver (cold mix)**

## HETHERINGTON & BERNER INC.

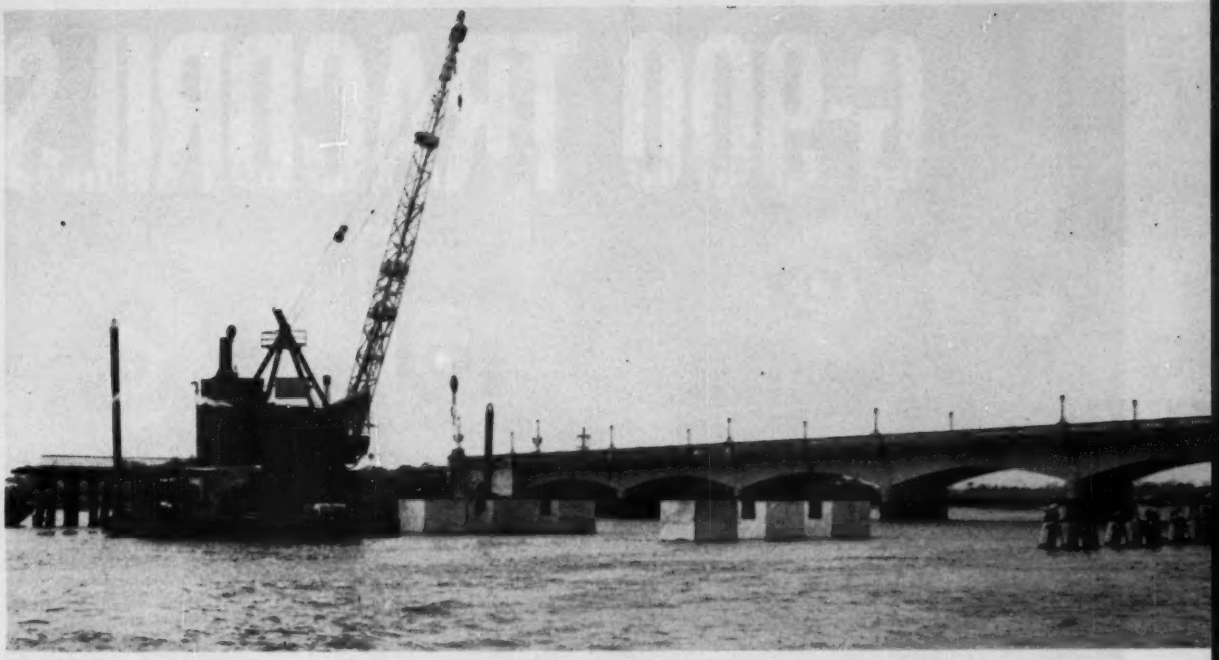
*A Wholly Owned Subsidiary of American Hoist & Derrick Company*

***Engineers***
***Manufacturers***

701 KENTUCKY AVE. • INDIANAPOLIS 7, IND.
*Export Dept.: 205 W. Wacker Drive, Chicago, Illinois*

*Cable Address:* Panmakina

*Circle 126 on Reader Service Card*



**PLACING BOXES**—Floating 40-ton revolving steam crane has just lowered a precast concrete cap form over a pile cluster. Clusters at right await boxes.

# Precast Forms Slice Cap Costs

PRECAST CONCRETE FORMS halved forming costs for pile caps on the Ashley River Bridge job near Charleston, S.C. Diamond Construction Co., Savannah, first drove three five-pile clusters for each of 12 bents. Over each cluster they placed a hollow, box-shaped cap form and fitted it with a steel bottom. After connecting the three boxes with precast struts, the cap forms were filled with concrete to tie the bent together.

Diamond cast the reinforced concrete forms on the job site. They are 8 ft wide, 10½ ft long, and 6½ ft high. Walls are 7 in. thick. A 2-in. inner lip on the lower edge of the box helps support the steel bottom that was added after placing the forms on the pile cluster. The boxes also had slots for 3x3-ft lateral struts to tie clusters into bents.

Before setting the cap forms, Diamond drove 36 clusters of one plumb and four battered prestressed concrete piles. Prestressed Concrete Co., of Charleston, made the 65-ft long, 24-in. octagonal piles. A four-drum, floating revolving crane, handling a McKiernan-Terry S-8 hammer on an H-beam spud lead, was used to sink the piles.

Diamond supported the cap forms on steel beams clamped to pile clusters. One continuous 12-in. H-beam was set horizontally on each side of the three-cluster rows that were to become bents. The two beams were adjusted to grade and then bolted together at each end.

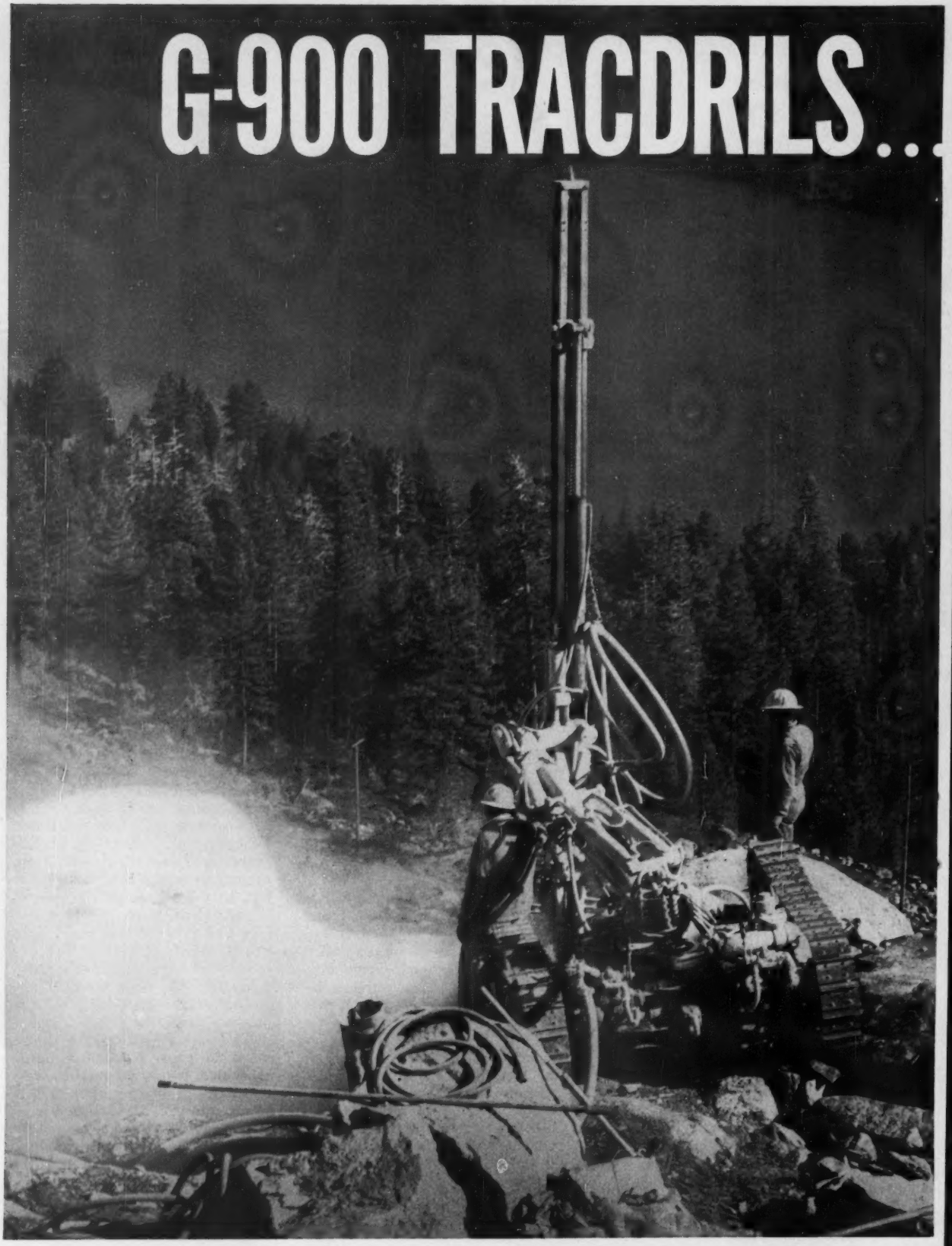
Next, a floating 40-ton revolving steam crane lifted the boxes from a barge and set them in position on the H-beams. When a cap form was placed on the supporting beams, it surrounded the pile cluster, which stuck up into the box about 3½ ft. The forms had four cast-in steel lifting lugs to make crane handling easier and to prevent handling damage.

Providing a bottom for the boxes was the next operation. Small H-beams were placed across the two 12-in. H-beams that supported the box forms. Across these smaller beams and the lip around the lower edge of the box, workers laid ⅛-in.-thick steel plates. These fitted together to compose a surface that prevented leakage of the concrete pour to follow. The plates had to be custom fitted to each box, since pile batters varied in the clusters. Tack welding the plates together further insured a sturdy bottom.

Reinforcing was placed in the boxes and when three were ready to become a bent, they were tied together with 3x3x9½-ft precast concrete struts. Struts ran from the center of the side of an outer box to the center of the side of a middle cap form. These members tied into the box pours with 1¼-in. reinforcing bars that extended into the cap forms. Also tying into the pour were twelve 1⅜-in. anchor bars for a column on each cluster.

A floating ready-mix plant made the pour. A 54x90-ft barge contained two 4-yd mixers with capacities of 65-70 yd per hr. Also mounted on the barge was a 30-ton revolving steam crane that handled concrete. Each cap took 14 yd of 3,500-psi concrete.

The firm of V. Barstow, New York City, designed the bridge and served as consultants. R. M. Hand was Diamond Construction Co.'s project manager.




**HIGH ON THE DONNER PASS** in the California Sierras a G-900 Tracdril sinks blast holes from the toughest of footings.

# . . . prove their power and stamina in Donner Pass

# THIS "JOB-BEATING" REPUTATION MEANS FOOTAGE RECORDS FOR YOU!

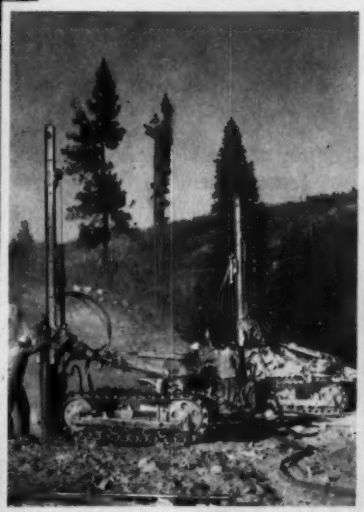
They're relocating Route 40 through the Donner Pass in the California High Sierras. They've got drilling problems that match the roughest conditions you'll ever find. High altitude, treacherous footing and hundreds of thousands of cubic yards of rock scheduled for removal. And they're moving the job along fast with teams of Chicago Pneumatic G-900 Tracdrils, backed-up by "Power Vane" 600 Rotary Compressors.

Operators find the *new* G-900 a mountain man's drill. It's got everything a driller expects from a high production rig . . . and it's got some real exclusives too! There isn't another track-mounted drill made that gives more surface or face coverage from one position. It can drill directly alongside tracks with full 180° swing. It handles horizontals 11 feet high at the face . . . snake holes at ground level. You can't beat a G-900 for safety! Release tramming throttles and heavy-duty brakes lock automatically . . . keep drill from shifting or creeping . . . hold on really bad ground.

Write for your copy of the new bulletin SP-3267 on the revolutionary G-900 Tracdril. *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

**Chicago Pneumatic** *8 East 44th Street, New York 17, N. Y.*

AIR COMPRESSORS • PNEUMATIC AND ELECTRIC TOOLS • AIR-BLAST BITS • REICHdrills • ROCK DRILLS



**FAST-ACTING,** labor-saving hydraulic cylinders ease driller's work load . . . two sets of grouped controls — one at turret, the other at boom end — save time and steps. The G-900 can drill true vertical holes at right angles to tracks . . . reach 63 inches beyond them!

**ONE OF SEVERAL BATTERIES** of CP-600 "Power Vane" Rotary Compressors feeds air to groups of G-900 Tracdrils in the high altitude conditions of the Donner Pass. Back up your air-powered equipment with "Power Vane" Rotaries . . . you get the portability, low maintenance and "hands-off" operation you need for the toughest jobs.

**"HYDRA - POISE" KNEE - ACTION** gives the G-900 Tracdril unmatched maneuverability and stability in rough country. Independently operated, extra-long crawlers provide 1350 square inches of ground contact.

*Circle 129 on Reader Service Card*

# YOU CAN GET PROMPT FORD INDUSTRIAL ENGINE SERVICE EVERYWHERE

## (including Hawaii and Alaska)

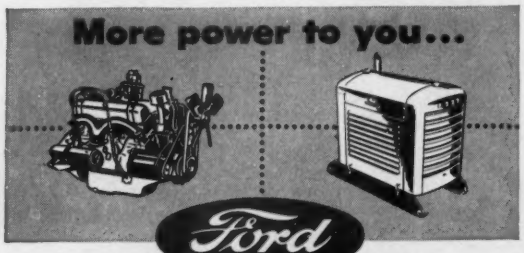
Whatever your job, wherever it takes you, you'll always find a Ford Dealer nearby to give quick assistance in solving any industrial engine problem.

Because this world-wide network of Ford Dealers offers speedy parts delivery and can arrange on-the-job service, your downtime costs are held to a minimum. Because Ford Dealers carry a stock of normal replacement parts, you need never invest in a large parts inventory of your own.

Also ready to serve you from coast to coast is a network of Ford Industrial Power Headquarters. They have the facilities and experience to repower your equipment, regardless of make, with a dependable, low-cost Ford Industrial Engine or Power Unit. Ford engines range from 134 to 534 cubic inches, including three highly efficient Ford diesels.

As a bonus, *all Ford engines offer a higher horsepower-to-weight ratio than ever before possible.*

To get the *right* engine for your application, call or visit your Ford Industrial Power Headquarters.




**INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 598, DEARBORN, MICH.**

West of Rockies write to:
→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.
→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

*Circle 130 on Reader Service Card*

# Sales and Service

*Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distribution, sales personnel and other activities.*

### Distributor Appointments

**Koehring Co.:** The Koehring, Parsons, and C. S. Johnson Divisions have appointed Cooper Equipment Co. of San Antonio, Tex., as distributor for their respective products. The Parsons Division has appointed Dal-Tex Equipment Co. of Dallas, Tex., as distributor. The Koehring and Parsons Divisions have appointed Western Machinery Co. of Abilene, Tex., as distributor.

**Quick-Way Truck Shovel Co.:** The following distributors have been appointed: Bairstow Distributing Co. of Atlanta, Ga.; Moody Equipment and Supply Co. of Little Rock, Ark.; Blackwood Hodge Ltd., of Colombo, Ceylon; and Aristide J. Paraskos & Co., of New York City, whose territory is the country of Greece.

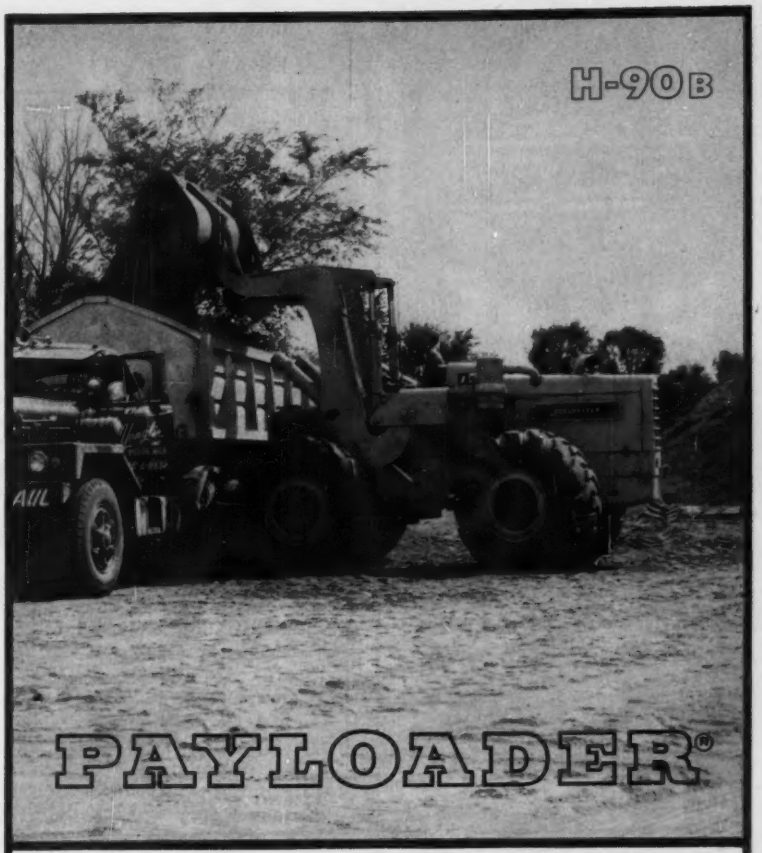
**Harnischfeger Corp.:** Embry Tractor & Supply Co. of Newburgh, Ind., has been appointed distributor for P&H construction and mining equipment in parts of Kentucky and Indiana.

**The Joyce-Gridland Co.:** Ferd Dieffenbach has been named engineering distributor in the Pittsburgh area for Joyce-Gridland industrial jacks and hydraulic equipment.

**Oxy-Catalyst Inc.:** The Automotive Division has appointed the following representatives for their line of exhaust purifiers: Henry F. Castle of Birmingham, Mich.; Rudy Otepka Associates of Villa Park, Ill.; The A. A. Betts Co. of Cincinnati, Ohio; F. R. Magill Co. of Pittsburgh, Pa.; Philip E. Chambers of Indianapolis, Ind.; John J. Connell Co. of St. Louis, Mo.; and Joseph H. Nook and Associates of Cleveland, Ohio.

### On the Sales Front

**A. M. Byers Co.:** A. C. Hawthorne, Jr., has been appointed a field


highest dumping clearance

The Model H-90B has proved by performance that it is tops in its class. One of its most obvious advantages is its high dumping clearance—almost a foot more than the average of all competitive models—and its long dumping reach.

**Power** is also outstanding—24 hp more than the average of all competitive diesel models.

**Stability** is unmatched because of long wheel base, wider wheel tread, and better weight distribution.

**Operator Safety** is assured with underslung boom arm design, fullest visibility and fixed ladder.

**Ease of Control** is provided by 4-wheel air brakes, dual cylinder power-steer, single lever "no-stop" power shifting to all gear ratios. "Operator's Choice" dual brake pedals—a "PAYLOADER" first—gives the operator a choice of braking with or without transmission engaged.

Your "PAYLOADER" Distributor is ready to give you all the facts about H-90B superiority. See him today.

HOUGH®

THE FRANK G. HOUGH CO.
706 Sunnyside Avenue,
Libertyville, Ill.

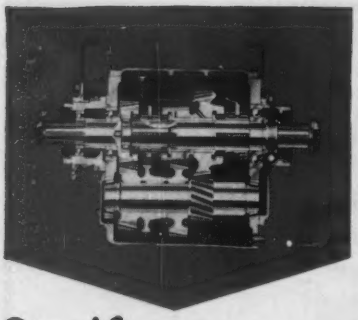
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

Send full data on the Model H-90B and many Attachments

11-8-2

Name
Title
Company
Street
City
State

*Circle* 131 *on Reader Service Card*



*Specify*

**FULLER**

*Specify the*

**MODEL**

*For medium-heavy duty trucks and tractors specify the*

**FULLER '65 SERIES**

**3-SPEED AUXILIARY**

- High capacity
- Widest range of ratios
- Top-mounted power take-off optional
- Low initial cost, reduced maintenance
- Available from all truck manufacturers on specification

**65 SERIES (Medium-heavy-duty) RATIOS**

| | SPLITTER RATIOS | | DEEP REDUCTION |
|---|---|---|---|
| MODEL | High | Intermediate | Low |
| 3-A-65 | .754 | 1.00 | 2.221 |
| 3-B-65 | .804 | 1.00 | 1.239 |
| 3-C-65 | .754 | 1.00 | 1.239 |
| 3-D-65 | .804 | 1.00 | 2.221 |
| 3-E-65 | .804 | 1.00 | 1.74 |
| 3-F-65 | .754 | 1.00 | 1.74 |
| 3-G-65 | 1.00 | 1.32 | 2.221 |
| 3-H-65 | 1.00 | 1.32 | 1.74 |

*Specify*

*Specify the* **MODEL**

**FULLER MANUFACTURING COMPANY**
(Transmission Division)
KALAMAZOO, MICHIGAN
Subsidiary EATON Manufacturing Company

*Circle 132 on Reader Service Card*



service engineer for the Philadelphia Division office.

**Ridley and Co.:** Jack Thomas has been appointed sales manager of Ridley and Co., manufacturers of high volume concrete guns and gunning rigs.

**Gorman-Rupp Co.:** J. Kenneth Sloan has been appointed a district representative covering a five-state mid-western area. He will make his headquarters in Clarendon Hills, Ill. Mr. Sloan replaces William S. Miller, who has been appointed sales manager of Gorman-Rupp of Canada, Ltd.

**J. I. Case Co.:** A Earl Lee has been appointed vice-president in charge of the newly established Marketing Division.

**Owatonna Tool Co.:** The following district sales managers have been appointed: John Hann and Robert Wilkinson for the Oregon, Washington, and Northern California territory; and William M. Myers for the state of Illinois with the exception of Chicago.

**Symons Clamp & Mfg. Co.:** Robert P. Tross has joined the Oakland, Calif., office of the company as sales engineer.

**Stoody Co.:** Max Kadonoff has been appointed field representative for the eastern part of Canada where he will work with the Stoody distributor, Air Reduction Canada Limited, on hard-facing problems in Ontario, Quebec, and the Maritime Provinces.

**Dundee Cement Co.:** John D. MacDougall has been appointed a sales representative in the Ohio district office at Cleveland. Edwin D. Sweeney has been appointed a sales representative in the Ohio district at Columbus.

**Leyland Motors (U.S.A.) Inc.:** Roy Hall has been named vice-president in charge of marketing for the company. He will be responsible for marketing the British - made Leyland trucks throughout the U. S.

**Air Reduction Sales Co.:** Blaine G. Harrington has been appointed manager of the Kansas City district.

### *In the Main Office*

**Truscon Laboratories:** Alvin S. Baer has joined Truscon as vice president. He was formerly general manager of the Sonneborn Chemical & Refining Corp., Building Products Division.

**Sika Chemical Corp.:** Rudolph C. Valore, Jr., has joined Sika as director of research. He replaces Ray Schutz who was promoted to vice president for research and development last January. Mr. Valore has had extensive experience in almost every phase of concrete technology, but he is especially interested in the manufacture of prestressed concrete elements and the manufacture and use of lightweight structural concrete.

### *Associations*

**Prestressed Concrete Institute:** Jacob O. Whitlock, president of Midwest Prestressed Concrete Co., has been elected president of the Institute for the coming year. The following officers were elected: Robert J. Lyman, vice president; Robert A. Matthews, secretary - treasurer; Harold R. Hutchens, director; W. C. Givens, director; Robert H. Singer, director; Harry Edwards, director, and Edward Schechter, director. Charles B. Kiesel, Jr., and Elmer D. Clark were re-elected to the board, and Ezra C. Knowlton continues as a director.

**American Society for Testing Materials:** Thomas A. Marshall, Jr., has been elected executive secretary of the Society.

### *Special Mention*

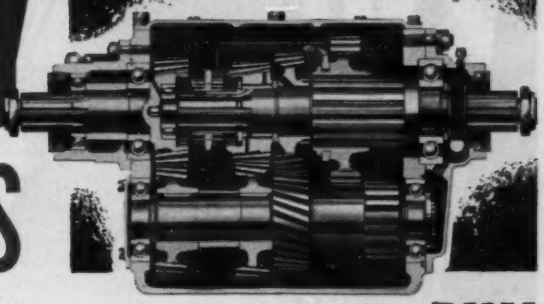
**T. L. Smith Co.:** The L. O. Gregory Mfg. Co. of Memphis, Tenn., has been acquired by Smith. The Gregory firm has been a leading supplier of batching equipment to the ready-mix, contractor, and concrete products market.

**Hewitt - Robbins Inc.:** Hewitt - Robins and the Union Chain and Manufacturing Co. have announced that the boards of directors of both companies have approved the acquisition for Hewitt-Robins common stock of the assets of Union Chain, subject to approval by the stockholders of Union Chain.

# NEW 4-SPEED AUXILIARY TRANSMISSIONS

for Medium-Heavy Duty Trucks and Tractors

# MODELS 4-B-73 AND 4-B-75



## SPLIT GEARS AND *GO*...SHIFT INTO DEEP REDUCTIONS AND *PULL*

You no longer have to pay a premium price for a 4-speed auxiliary which is heavier than your operation demands. Save weight *and* money with one of the new Fuller 4-speed Auxiliaries equipped with overdrive, direct, low and low-low gear ratios in one compact, 375-pound unit. Get gear-splitting ratios plus deep reduction.

The Fuller 4-B-73 is designed for use with engines producing approximately 500-600 lb./ft. of torque. Use of special high-capacity bearings permits the 4-B-75 to be used with engines in the 600-700 lb./ft. torque class.

Get all the extras of price, performance and payload. Specify the new Fuller 4-B-73 or 4-B-75 4-speed Auxiliary Transmissions. For full details, see your truck dealer or write Fuller Manufacturing Company.

**GEAR RATIOS**
***Models 4-B-73 and 4-B-75***

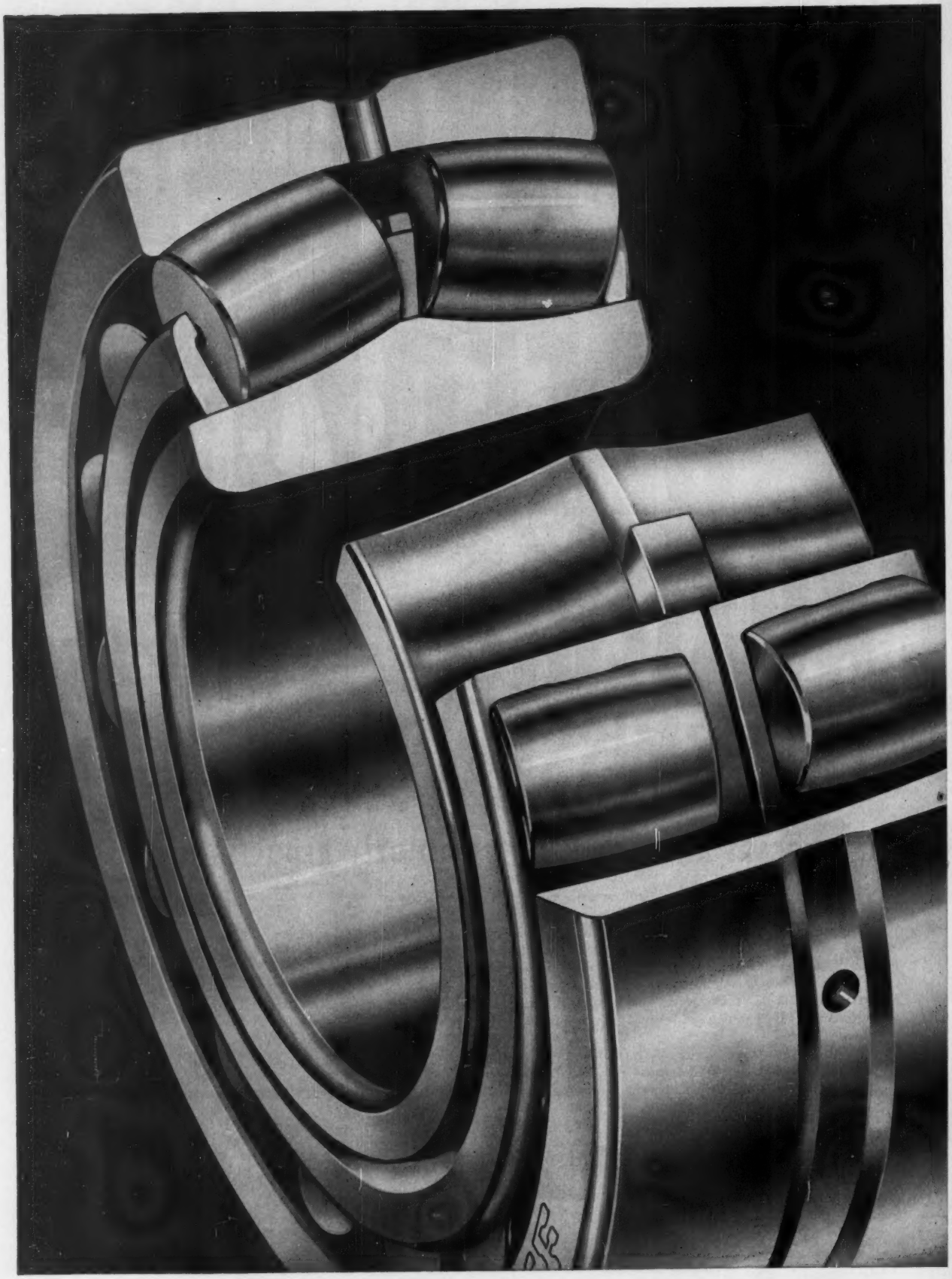
| | |
|---|---|
| Overdrive | .85 |
| Direct | 1.00 |
| Low | 1.24 |
| Low-Low | 2.22 |

**FULLER**

*TRANSMISSION DIVISION*
**MANUFACTURING COMPANY**
**KALAMAZOO, MICHIGAN**
*Subsidiary EATON Manufacturing Company*

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla. Automotive Products Company, Ltd., Automotive House, Great Portland Street, London W.1, England, European Representative

*Circle* 133 *on Reader Service Card*



# Now SKF has improved the spherical roller bearing it invented!

This new spherical roller bearing offers even higher capacity than SKF's original, self-aligning bearing – and meets the needs of today's faster, more productive machinery. In some cases, the increase in capacity is as much as 54% – corresponding to more than 4 times longer service life!

## Here's how these improvements have been obtained:

1. Eliminating undercuts and integral flanges – helps provide space for larger rollers and longer effective contact between rollers and races.

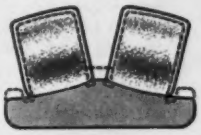


Fig. 1

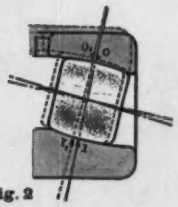


Fig. 2

2. Using symmetrical rollers, unrestricted by flanges – ensures uniform load distribution over the roller length at all times, even under heavy thrust load.

3. Using an axially floating guide ring – provides effective roller guiding, and minimizes friction at roller ends.

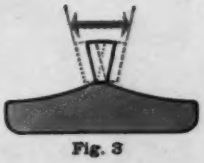


Fig. 3

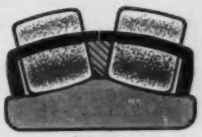


Fig. 4

4. Using a strong "window-type" cage for each row of rollers—helps ensure dependable operation over a full range of loads and speeds.

5. Placing a lubricant duct in the center of the outer ring—helps channel lubricants directly to the rollers and push contaminants away.

Fig. 5

For full details on this new high-capacity spherical roller bearing call the nearest SKF sales office or authorized SKF distributor listed in the yellow pages of the telephone book.

5931

*Spherical, Cylindrical, Ball, and Tyson Tapered Roller Bearings*

EVERY TYPE—EVERY USE

SKF®

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

®REG. U. S. PAT. OFF.

*Circle 135 on Reader Service Card*

# Construction Equipment News...

*For more information on any item, circle the key number found at the end of each item, on the READER SERVICE CARD just inside the back cover.*

## Roll Crusher Produces at a High Rate

Crusher rolls on this plant are 40 in. in dia and 30 in. wide. According to the manufacturer, the 4030 portable roll crusher secondary can produce 5,600 yd of 1-in.-minus aggregate material in a 10-hr day. The Universal plant incorporates a 5x14-ft, three-deck Screenmaster scalping and finishing screen.

One of the features of this plant is a hydraulic adjustment mechanism that changes the roll spacing and spring tension. A few strokes of the hydraulic pump depress the springs so spacers can be inserted or removed either to increase or decrease the spring tension.

Triple running gear in the rear, and either a fifth wheel or running gear in front, carry the plant over the highway. The entire unit is mounted on an I-beam gooseneck frame. Additional side delivery conveyors and feeders are optional.—Universal Eng. Corp., 625 "C" Ave. N.W., Cedar Rapids, Iowa.

*Circle* **301** *on Reader Service Card*

## Screed Adjusts from 8 to 50 Ft

Adjustable length, crown, and amplitude enable this vibrating screed to strike off stiff mixes for slabs from 8 to 50 ft wide with or without a crown. The unit consists of a wooden screed beam with a 3-in. steel flange on each side.

Bolts along the beam raise or lower the flanges to correct for beam deflection and provide a crown where necessary. An adjustable hinge assembly in the center of beams that are longer than 30 ft makes it easy to ship these units in two sections. Beams over 40 ft long are equipped with tie rods along each side to prevent the screed from bowing out when in use.

Powered by a 2½-hp gas engine, the vibrating unit features a dial that adjusts the amplitude by turning the eccentric on its axis. The screed rides on 6-in.-wide rollers and is equipped with a lever that raises the beam off the slab for backing up. Hand winches are available for pulling the screeds. —Stow Mfg. Co., 31 Shear St., Binghamton, N.Y.

*Circle* **302** *on Reader Service Card*

### Tractors Are Line's Biggest

Diamond T's 931 series of diesel-powered truck tractors are rated at 60,000 lb gvw and 78,000 lb gcw. They're available with a choice of six Cummins engines rated at 220 to 320 hp.

Eight main transmissions with four to twelve speeds, four auxiliary transmissions, and eleven different rear axles are available. The units also are built as six-wheelers with a choice of nine tandem axles rated from 34,000 to 50,000 lb.—Diamond T Motor Truck Co., 4401 W. 26th St., Chicago, Ill.

*Circle 303 on Reader Service Card*

### Lift Truck Works Outdoors

The Series 4000 Ford fork lift is small enough to be used indoors, but it is designed primarily for rough-terrain, outdoor use. For better maneuverability, it can be equipped with a reversing transmission gear shift. Power comes from a 172-cu-in. engine, either gasoline or diesel.

Four stacking heights ranging from 10 to 21 ft are available. Rigs with a 10 or 12-ft lift can handle a 4,000-lb load. The mast tilts 6½ deg forward and 13½ deg backward, and the load can be shifted 6 in. sideways.—Tractor and Implement Div., Ford Motor Co., Birmingham, Mich.

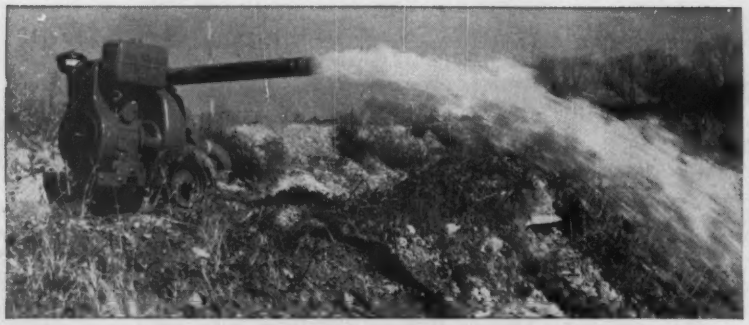
*Circle 304 on Reader Service Card*

### All Four Wheels Drive Trencher

"A big self-propelled trencher in a small package" is the way Auburn describes its new digger. The Auburn Compact is powered by a 9-hp Wisconsin engine and can operate equally well in forward and reverse. Hydraulic power drives the four wheels and adjusts the forward speed to soil conditions.

Digging speeds up to 500 ft per hr are possible. The rig can cut trenches 3, 4½, and 6 in. wide down to a depth of 5 ft. The boom is lifted hydraulically through a 186-deg arc. For transportation over the highway, two of the rig's wheels are raised off the ground, and the trencher can be towed behind a car or truck.—Auburn Machine Works, Auburn, Neb.

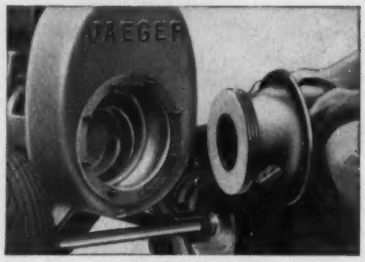
*Circle 305 on Reader Service Card*



## It's Jaeger's new 3″ pump . . . the "3PN"

### *Out-performs all previous models*

Pumps all the water a 3″ suction hose can handle. With 4″ suction hose pumps 28,000 gph at 10′ lift. Sure-priming is correspondingly fast, at all practical lifts.



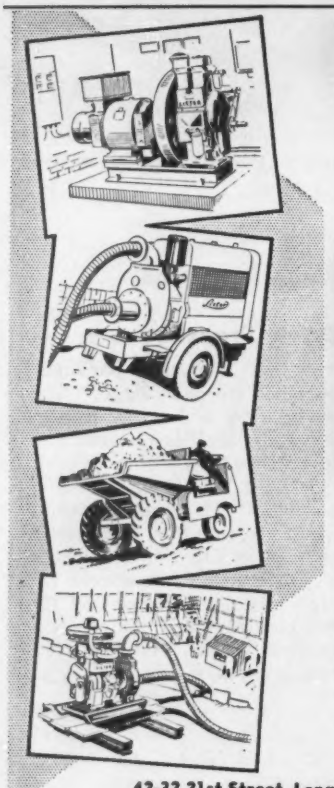

**AND LOOK HOW EASY TO MAINTAIN!**

Suction chamber and liner are removable for quick adjustment, rotation or replacement of liner plate. (New Model 3XPN offers same feature in a smaller pump.) See your Jaeger distributor or send for catalog.

**THE JAEGER MACHINE CO., 800 Dublin Avenue, Columbus 16, Ohio**

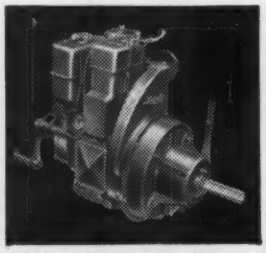
AIR COMPRESSORS • MIXERS • PAVING, SPREADERS and FINISHERS

*Circle* 138 *on Reader Service Card*



**LISTER**

**power for all purposes**



**AIR-COOLED DIESEL ENGINES**

**1½ to 72 HP**

***Eliminate winter worries!***

Built-in cold-starting for sub-zero temperatures; totally enclosed working parts. No "freeze-ups". Power take-off, full rpm, flywheel end or half speed gear end. *Write for data and prices.*

**LISTER-BLACKSTONE, Inc.**

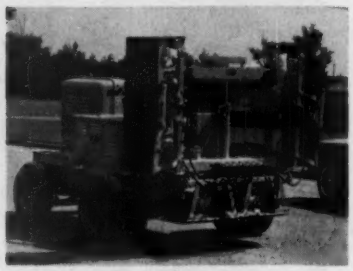
**42-32 21st Street, Long Island City 1, N. Y. Tel.: STillwell 6-8202**

*Canadian Lister-Blackstone, Ltd., 1921 Eglinton Ave. E., Toronto 13, Ont.*

*Circle* 204 *on Reader Service Card*


## EQUIPMENT NEWS...

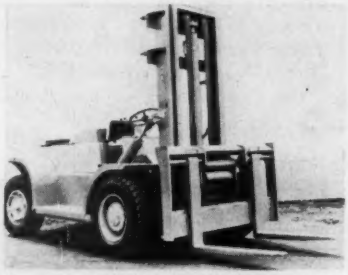
***For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.***



### *Vibratory Compactor*

Two new features have been incorporated in current models of Jackson vibratory compactors. One is a hydraulically actuated device that raises the two compactor shoes on either side of the rig into a vertical position. This reduces the 13-ft 3-in. working width to 88 in. for traveling. The second feature also is a hydraulic device; it lowers and raises the compactor shoes to and from the area being compacted.—Jackson Vibrators, Inc., Ludington, Mich.

*Circle* 306 *on Reader Service Card*



### *Fork Truck Attachments*

Side shifter and slope piler attachments help fork truck operators handle loads on uneven ground. Both attachments are available for Clark fork trucks of 15,000 to 20,000-lb capacity.

The A-20 side shifter cuts down truck maneuvering. It allows a 6-in. shift to either side of the truck's center. The combination side shifter and slope piler consists of a unit similar to the A-20 and a hydraulic pivot arrangement. With it the operator can pivot the forks 5 deg about the center line of the carriage and align them with a load that is not level. It's handy for work on rough ground.—Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich.

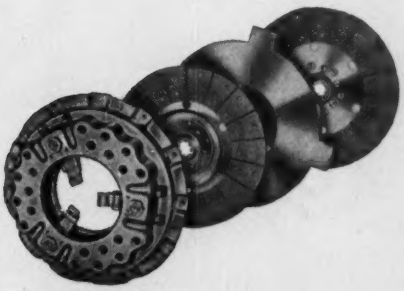
*Circle* 307 *on Reader Service Card*

## *In Heavy Construction Equipment, too,*

## *the Trend is to* LIPE CLUTCHES

Cost-conscious construction men count profits in terms of *actual* operating costs. Replacement clutches are measured not only by initial price, but also by the frequency and cost of repair and maintenance. All these factors add up to the growing trend among heavy equipment contractors to specify LIPE replacement clutches in dumps, cranes, shovels, earthmovers and other heavy duty rolling stock.

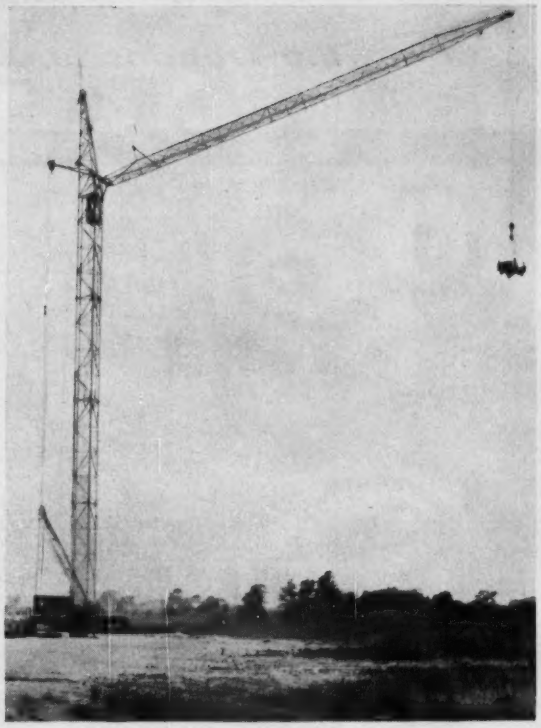
Simplicity, direct drive, easy adjustment and replacement-exchange make the Lipe DPB the choice of construction men for truck GVW applications of 19,000 pounds and up. Built with fade-resisting chrome-silicon springs, and designed to shrug off shocks and dissipate friction-generated heat, the DPB stays in service longer, with lower costs for fuel, oil, brake relining and repair of all components in the power train. See your Lipe distributor soon. He'll show you why . . . *the trend is to* LIPE!



*Lipe Heavy-Duty DPB Clutches are available in single and two-plate types; 12", 13", 14" and 15" sizes; with torque capacities from 300 to 1900 ft.-lbs.*

Lipe-ROLLWAY CORPORATION SYRACUSE 1, N. Y.

*Circle 139 on Reader Service Card*



## *U. S. Built Tower Crane Will Compete With Imports*

Bucyrus-Erie has just introduced its first tower crane. It will compete with European imports that are growing more numerous and popular here day by day. The Mark I-50 tower crane is electrically powered and rides on rails. All four of the crane's basic functions—swing, load hoist, boom hoist, and travel —can be operated either independently or simultaneously.

The crane's tower can be extended by adding sections to match the height of the building being worked on. Boom lengths range from 60 to 120 ft. At maximum reach it can lift 1 yd of concrete, maximum lifting capacity is 8 tons. The operator can position his cab in the tower at a level that gives him the best visibility of the work area.—Bucyrus-Erie Co., South Milwaukee, Wis.

*Circle* 308 *on Reader Service Card*

## *Dodge Introduces 1961 Trucks*

A total of 140 basic models will be available in Dodge's 1961 line of trucks. These range from a Dart pick-up to a 2½-ton tractor with a gvw rating of 53,000 lb.

Eleven gasoline engines ranging from 101 to 228 hp are offered for the line. Also available are eight diesels, four built by Cummins, rated from 160 to 250 hp.—Dodge Div., Chrysler Corp., 7900 Joseph Campeau, Detroit 31, Mich.

*Circle* 309 *on Reader Service Card*

## *Fork Lift Offers Three Masts*

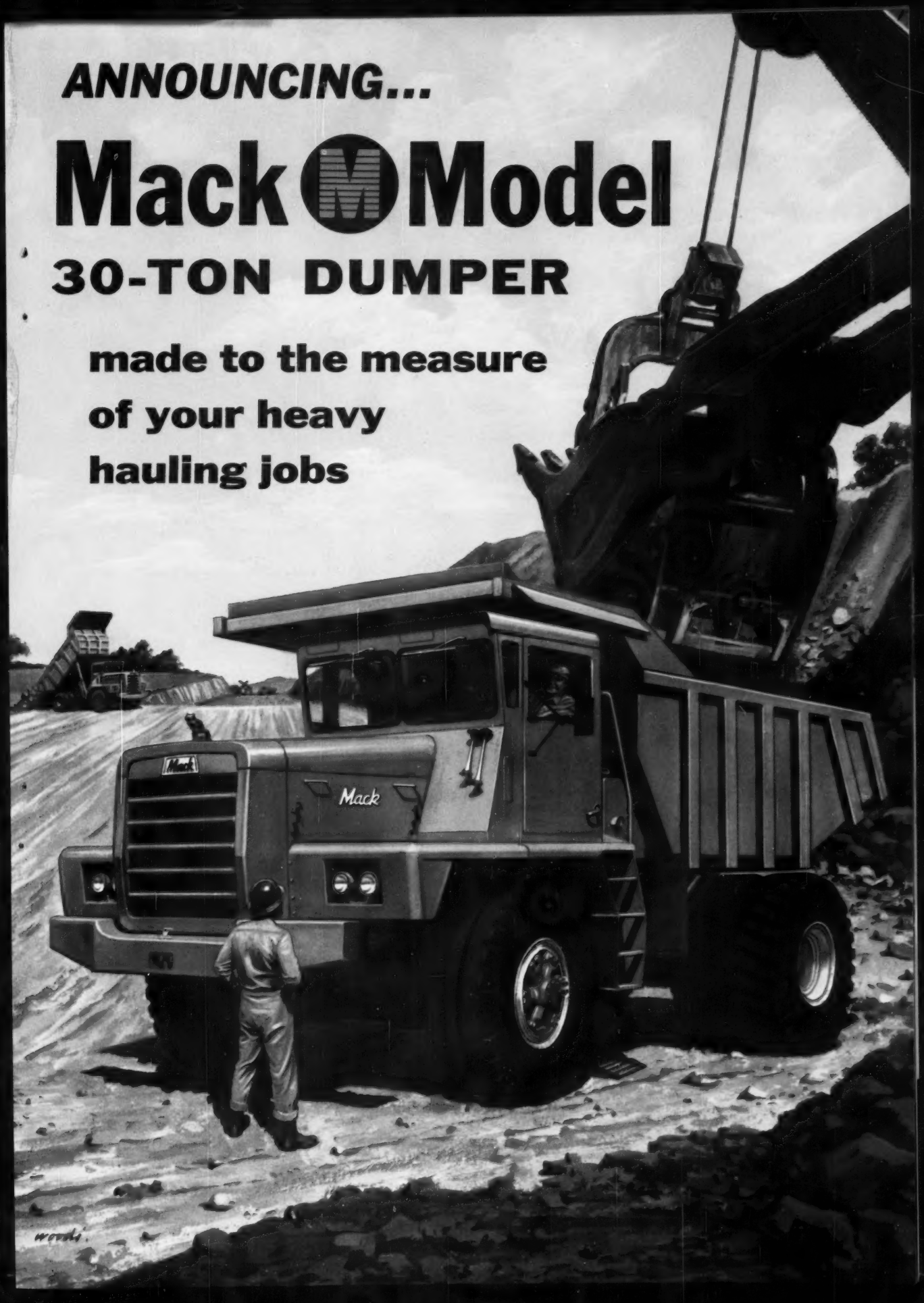
Maximum lift heights for three different three-stage masts available on the Case Model 430 fork lift are 10½, 14½, and 21½ ft. Lift capacity to maximum height in the first two stages is 4,000 lb. In the third stage it is 2,500 lb.

Either a 38.5-hp gasoline or a 41.5-hp diesel engine powers the rig. It is equipped with power steering and synchronized shuttle shift. The mast is hydraulically actuated. Standard forks are 48 in. wide, but 42 and 36-in. forks are available.

Optional equipment includes side shift and tilt attachments, a ½-yd materials bucket, a ½ or 1/3-yd concrete bucket, a crane boom, and angledozer blade. —Industrial Div., J. I. Case Co., Racine, Wis.

*Circle* 310 *on Reader Service Card*

*Circle* 141 *on Reader Service Card* ➤


ANNOUNCING...
Mack Model
30-TON DUMPER
made to the measure
of your heavy
hauling jobs
Mack
Mack

# Mack Model

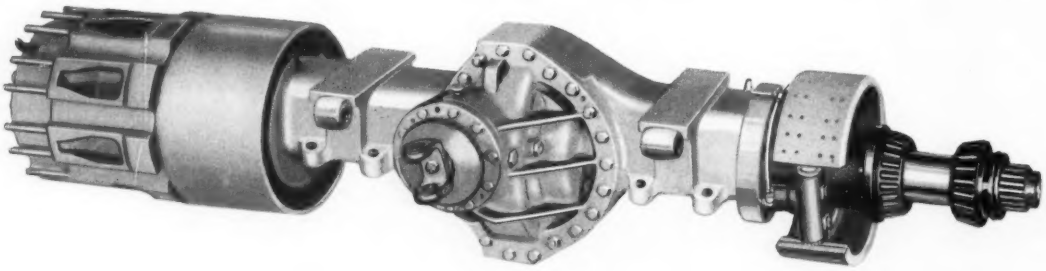
## 30-TON DUMPER

### *with the components to make your hauling jobs more profitable*

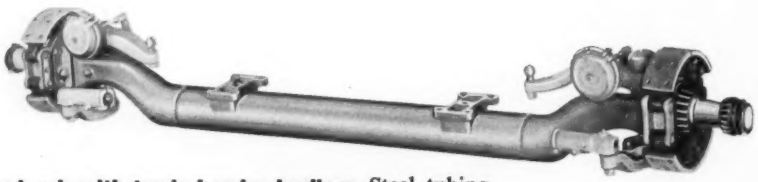
Made to master the heavy loads increasingly commonplace in the mining, quarrying and construction industries is Mack's new M-30X Model four-wheel end-dumper chassis.

This new addition to the Mack line of off-highway vehicles retains many of the time-proved features that have won Mack construction trucks worldwide fame for complete reliability and performance far surpassing lesser vehicles.

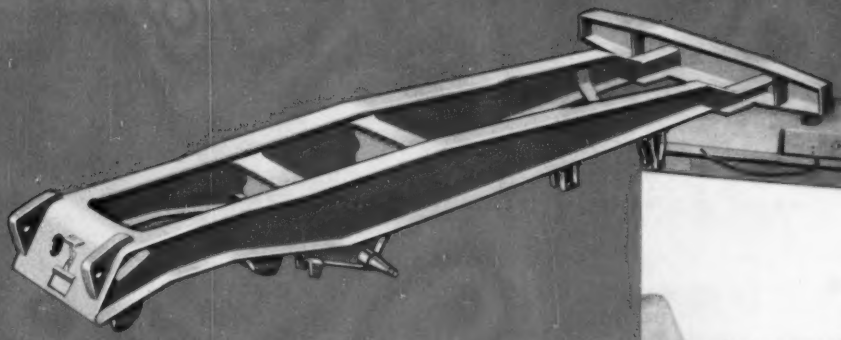
Add the many significant features exclusive to the Mack M Model . . . features that make the M-30X Model even more rugged, powerful, dependable and safe . . . and you have a vehicle sure to be first choice among those who must haul huge tonnages profitably.



**Heaviest-duty Mack rear axle, combining hypoid carrier with Planidrive, keeps M-30X hustling where others bog down.** With Mack's patented Planidrive planetary gear drive in the rear axle hubs giving the dig-out torque needed for heavy off-highway hauling, the Mack Model M-30X boasts one of the strongest, longest-lived rear axles of any 4-wheel dumper in the field. Drive is through exclusive single-reduction hypoid Mack carrier, with planetary gears. Suspension is by extra long, extra broad semi-elliptic progressive-rate leaf springs with cam face slipper ends and radius rods.

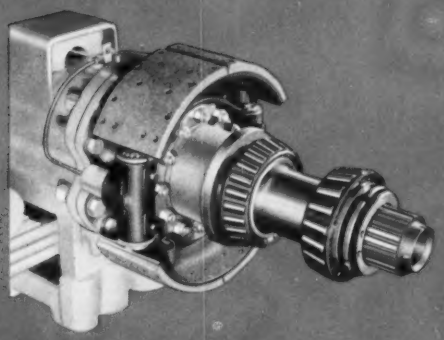


**New tubular front axle withstands heavier loadings.** Steel tubing, seven inches in diameter, with walls ¾" thick is welded to cast ends to provide a reversed-elliott front axle that withstands the most punishing loads of quarrying, construction or mining.



**Five-crossmember frame shrugs off jarring drop loads of big shovels.** Typical of Mack off-highway truck construction practices, the frame of the M-30X Model is extra solid, extra strong. Five crossmembers, including integral front and rear bumpers, tie alloy steel fabricated I-beam main rails together to provide wrack-free support. Crossmembers are welded to web of main rails to prevent stress concentration in flanges. All corners are gusseted, with gussets welded to webs.

**New massive, functional cab for extra strength, driver comfort.** Completely new in appearance, the Mack M-30X cab is not only rugged, but completely functional. Efficient modern lines offer a reverse-slope windshield which lessens glare and reflections while reducing dirt and dust accumulation. Forward position permits heavier loading of new, larger-capacity setback front axle. Offset cab design provides maximum vision forward and behind for quicker spotting, quicker dumping, safer truck operation. Piano-hinged cab doors give extra strength, double cab venting gives extra comfort. Interior layout features easy accessibility and instrument visibility . . . lets driver concentrate on the job.



**Unsurpassed stopping power—another M-30X feature.** Shouldering a 30-ton payload demands safe, sure braking power. But the M Model's braking system more than meets the challenge. Front brakes are air, supplied by a 12 cu. ft./m. compressor, while rear brakes are air-hydraulic. Separate master cylinders at rear brakes provide safety factor in case of failure at either wheel. All brakes are internally expanding with simplified adjustment.

# Mack Model M-30X

## *Built to extra-heavy-duty specifications*

**PAYLOADS:** Rear dumper, 30 tons

**WHEELBASE:** 165″

**PLATFORM LENGTH:** 144″

**OVER-ALL LENGTH:** Front bumper to end of body, 323″

**DIESEL ENGINES:** 320 hp to 380 hp, six-cylinder diesel engines

**COOLING SYSTEM:** 1500 sq. in. frontal radiator, continuous finned, flat-tube

**ELECTRICAL SYSTEM:** 12-volt, 55-amp.

**STARTING:** Electrical, 24-volt

**TRANSMISSIONS:** Mack, selective, constant-mesh, 8 speeds forward, 2 reverse; optional Torqmatic transmission and Torqmatic brake; integral torque converter and planetary transmission selective shift

**CLUTCH:** Two-plate, air-assist with manual actuation

**REAR AXLE:** Single-reduction hypoid carrier, with final reduction Mack Planidrive planetary gear reduction within wheel hubs

**FRONT AXLE:** Mack, heavy-duty, tubular, welded cast ends

**BRAKES:** Front, air; rear, air-hydraulic; rear wheels with separate air and hydraulic cylinders to prevent complete loss of braking in event of failure at one wheel; 12 cu. ft. compressor

**FRAME:** Alloy steel, wide-flange I-beam, 137 section-modulus

**STANDARD BODY:** Heavy-duty 100,000 psi alloy steel

**CAPACITY:** Struck, 20 cu. yd.; heaped SAE rating, 25.5 cu. yd.

**SPRINGS:** Front, semi-elliptic, progressive rate; rear, semi-elliptic, progressive rate with cam face slipper ends and radius rods

**WHEELS:** Cast-spoked

**TIRES:** 18.00 x 25, 24-ply tubeless on 13.00 rims

**STEERING:** Hydraulic power-steering, 30′ turning radius

**DUMP HOIST:** Twin, double-acting, outboard mounted, two-section telescopic cylinder assembly, providing 60° dumping angle

**POWER TAKEOFF:** Mack, 50 hp

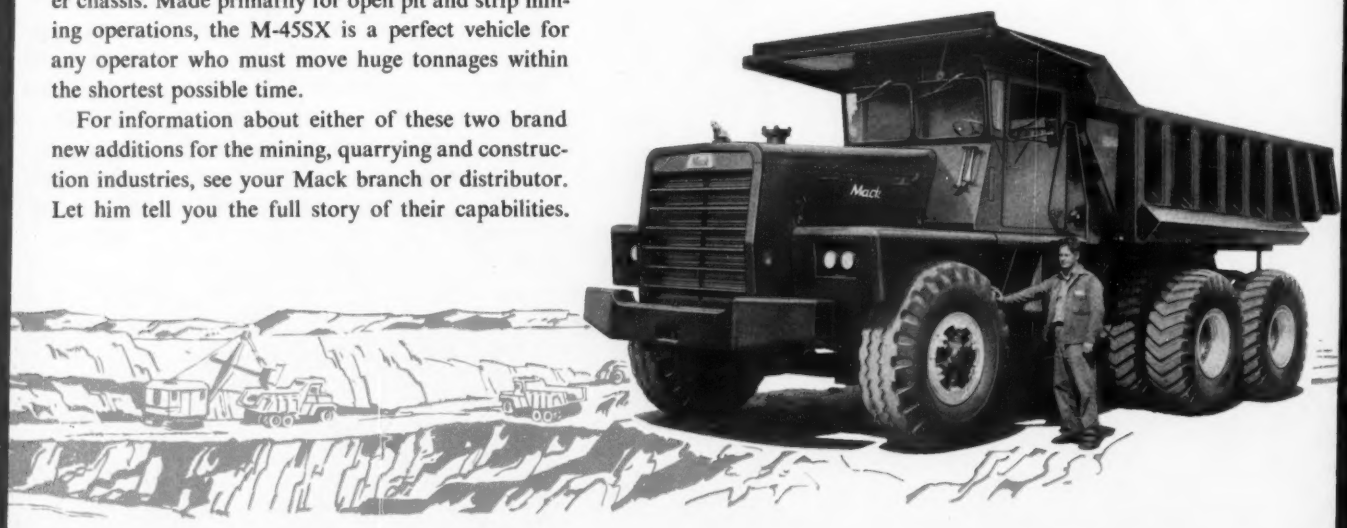
**OPTIONS:** Air-starting; rock ejectors

**MACK** FIRST NAME FOR **TRUCKS**

*Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario*

**Mack M-45SX Model—six wheel, 45-ton mining-duty dumper.** Unmatched capacity in the heavy-duty hauling field is offered in this companion to the M-30X—the remarkable Mack Model M-45SX six-wheel dumper chassis. Made primarily for open pit and strip mining operations, the M-45SX is a perfect vehicle for any operator who must move huge tonnages within the shortest possible time.

For information about either of these two brand new additions for the mining, quarrying and construction industries, see your Mack branch or distributor. Let him tell you the full story of their capabilities.




PRINTED IN U.S.A.

7940

# compare

## TORQUE · PERFORMANCE · DEPENDABILITY

*BUY A...* SIOUX

**AIR or ELECTRIC**

## IMPACT WRENCH

# Air impact wrenches deliver

# up to 15% more torque

## while consuming 30% less air!

NO. 322

Superiority of their mechanical design is revealed in the unusual efficiency of SIOUX Air Impact Wrenches. Wrench for wrench, model for model, size for size, SIOUX can be counted upon to deliver an average of 15% more torque, while consuming 30% less air! Less power is absorbed by the wrench itself. More is applied to the drive. Three SIOUX wrenches can be operated on the existing air supply for every two of another kind. This correctness of engineering design has also produced a wrench of superior endurance, longevity, and freedom from trouble. Low first cost, higher torque, lower air consumption and long trouble-free life add up to make SIOUX THE BIG BUY IN AIR IMPACT WRENCHES!

## No guess work with .... CERTIFIED SIOUX POWER

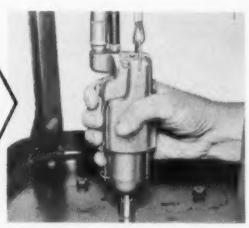
When it's a SIOUX, you know what it will do! SIOUX tells you the torque your air or electric impact wrench will deliver. You don't buy just a wrench. You buy certified SIOUX power, reversible power, and on air wrenches controllable power through eight point power selector.

## REACTION BALANCED for Less Vibration Feed Back

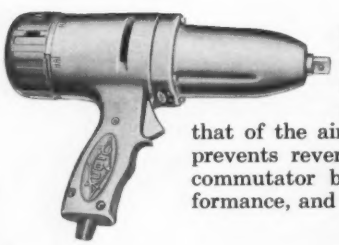
All SIOUX Impact Wrenches are "reaction balanced" for less vibration and torque feedback and for minimum operator fatigue. There's less shock and twist when the wrench impacts. You can feel the difference!

## A SIZE FOR EVERY NEED!

From the big No. 322 SIOUX Air Impact Wrench (upper left) capable of up to 1,000 foot pounds of torque at 90 pounds of air pressure, to the little No. 313 (pictured at right) which weighs 2½ pounds and can deliver up to 80 foot pounds of torque, there's a full range of SIOUX impact wrench sizes and models.



## SIOUX Electric IMPACT WRENCHES



**SIOUX** Electric Impact Wrenches offer equal power in right or left hand rotation. The torque for each wrench is stated and certified. Their mechanical design offers exactly the same advantages as that of the air wrenches. Their exclusive reverse cap switch lock prevents reversing with the current on, and eliminates burning commutator brushes and switch contacts. Their efficiency, performance, and freedom from trouble are unexcelled.

*Look under* **"TOOLS, ELECTRIC"** *in the Yellow Pages*

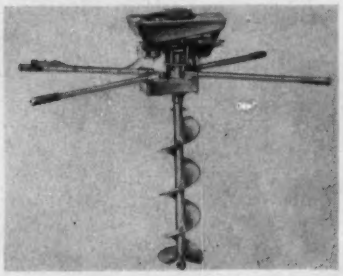
## ALBERTSON & CO., INC.

SIOUX CITY, IOWA • U.S.A.

AIR IMPACT WRENCHES • AIR SCREWDRIVERS • ELECTRIC IMPACT WRENCHES • ELECTRIC SCREWDRIVERS • DRILLS • GRINDERS • SANDERS • POLISHERS • FLEXIBLE SHAFTS • PORTABLE SAWS • VALVE GRINDING MACHINES • ABRASIVE DISCS

## EQUIPMENT NEWS...

*For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.*

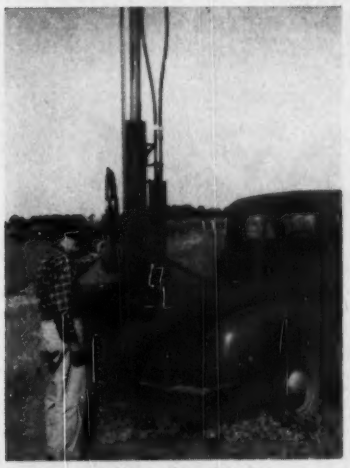


### *Two-Man Power Drill*

The General Model 32 earth drill weighs less than 50 lb with an average size auger. It is powered by a 2½-hp, 2-cycle, air-cooled engine and can drill holes from 2 to 12 in. in dia.

The drill is equipped with a centrifugal clutch that disengages at idling speeds. It acts as an automatic safety device whenever the auger hits rocks or other obstacles. Fob price of the drill with a 10-in. auger is $210.—General Equipment Co., Owatonna, Minn.

*Circle* 311 *on Reader Service Card*



### *Soil Sampling Machine*

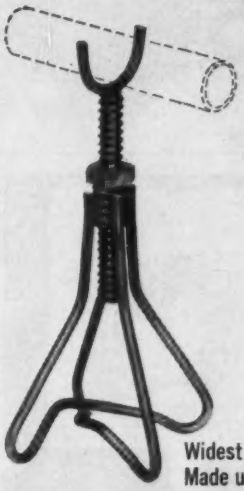
Augers or probe-type tools fit on the same head of a soil sampling machine that can be operated by one man. The rig is able to bore shallow holes, take undisturbed soil samples, and drive or pull fence posts.

It's hydraulically powered and driven by a truck or tractor pto. Coring speed is 10 fpm, and maximum drilling depth is 20 ft.—Giddings Machine Co., 401 Pine St., Fort Collins, Colo.

*Circle* 312 *on Reader Service Card*

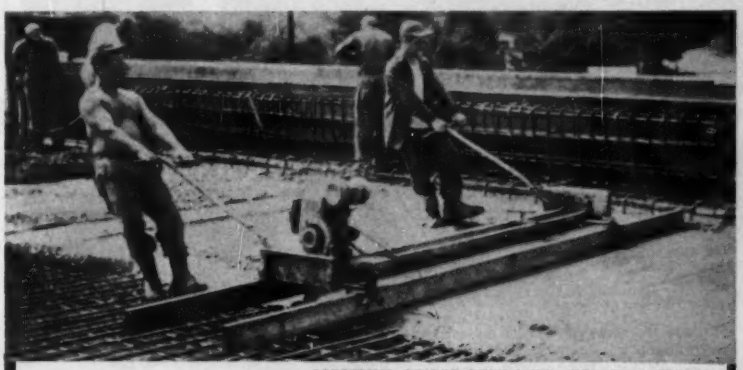
*Circle* 146 *on Reader Service Card*


# Richmond Free-Fit Screed Bases can be adjusted without turning cradlehead—available for ½" and ¾" supporting units



- Designed to support pipe or T-bars without deflection under heavy loads.
- Screed Holder is re-useable.
- Can be adjusted for height simply by turning the Jam Lagnut.
- Free-Fit collar permits free passage of ½" or ¾" cradlehead as needed.
- Essentially rugged, dependable supports able to withstand severe screeding action.
- Legs crossed for greater strength and to eliminate deflection.
- Curved leg ends provide for only four small points of contact.

Widest range of sizes for slabs up to approx. 2 feet. Made up on request for 2 feet or over.



SCREEDING BRIDGE DECK WITH VIBRATING SCREED

**Hanger Frame Screeds** are designed to do the two-fold job of supporting screed rails while holding hanging forms. Spans up to 42 feet have been screeded with these devices. Whatever the type or size, all Richmond screeding devices provide the extra strength that saves money and assures a better concreting job.

There are more than 400 items in the Richmond line of engineered form tying devices, anchorages, inserts and accessories... Richmond's 49 years of experience stand behind them and it will pay you to use them. Send for Richmond Bulletin No. 4 dealing with Adjustable Screed Chairs—and, if you have any specific concreting problems, ask us about them... we can help you. Write to:

Richmond SCREW ANCHOR CO., INC.
INSIST ON RICHMOND ... AND BE SURE IT'S RICHMOND

**Main Office: 816-838 LIBERTY AVENUE, BROOKLYN 8, N. Y.**
**Plants & Sales Offices: Atlanta, Georgia; Fort Worth, Texas; St. Joseph, Missouri. In Canada: ACROW-RICHMOND LTD., Orangeville, Ontario.**

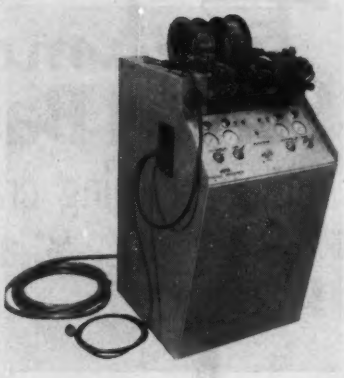
*Circle* 147 *on Reader Service Card*

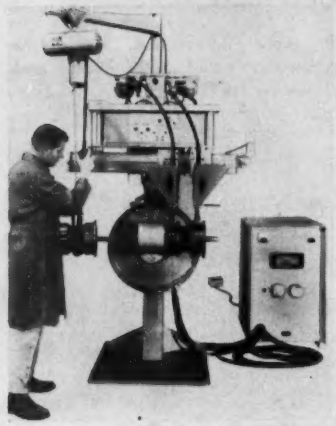
## EQUIPMENT NEWS...

*For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.*

### *Tools for Rebuilding Track Rollers and Idlers*

Here's a pair of machines designed for the small shops handling maintenance of track-type equipment. One of the units, the Victor Model B, automatically





rebuilds rollers and idlers, the other flame-hardens roller flanges.

The Model B features a double-wire feed, automatic move-over, and motorized positioning of the work. Its double spindle mounts only two rollers or idlers at a time. A built-in ¼-ton jib crane helps the operator position large parts.

Rebuilt flanges are hardened on the roller flange flame hardener to approximately a 50 Rockwell C hardness. Dual torches cover both the inside and outside of the roller simultaneously. — Victor Equipment Co, 844 Folsom St., San Francisco 7, Calif.

*Circle* 313 *on Reader Service Card*

WISCONSIN-POWERED LOADER — made by ULMac Equipment Co., Inc., El Paso, Ill. — speeds ditching, stripping, widening, borrowing, and windrow loading. A sudden freeze will not disable the air-cooled Wisconsin or your equipment.

# 56-hp WISCONSIN ENGINE

## loads 15 cu. yds. min.— slashes upkeep

The 56-hp air-cooled Wisconsin offers you king-size power and economy. Its rugged all-weather dependability enables equipment like this ULMac loader to earn its keep — *and more!*

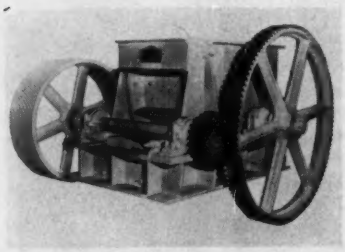
The husky Wisconsin has no radiator, water pump, fan belt, or other water-cooling frills to run up cost and upkeep. There's no water to haul — no anti-freeze to buy — and no conditioning routine for winter and summer use.

The Wisconsin is precision-fitted for long life. Its high torque pulls the engine through shock loads without stalling — keeps your job on schedule.

Power your equipment with air-cooled Wisconsin Engines — 3 to 56 hp. Send for Bulletin S-251. Write to Dept. C-30.

**WISCONSIN MOTOR CORPORATION**
MILWAUKEE 46, WISCONSIN
*World's Largest Builders of Heavy-Duty Air-Cooled Engines* C-227

*Circle* 148 *on Reader Service Card*

### *Single-Roll Crusher*

Soft materials such as slate, shale, gypsum, phosphate rock, limestone, or shells can be crushed at rates from 40 to 660 tph in Atlas single-roll crushers. The plants require from 20 to 200 hp. They can be equipped with rollers of 18, 24, or 36-in.-dia to handle feeds up to 26 in. thick.

Contoured breaker plates keep feed materials from clogging, and an automatic toggle and torsion spring safety release prevents damage from uncrushable matter. The breaker plate can be adjusted by shims to control the product size.—Pennsylvania Crusher Div., Bath Iron Works Corp., West Chester, Pa.

*Circle* 314 *on Reader Service Card*



*Circle* 149 *on Reader Service Card* ➤

# Vibrating shoes consolidate fast, deep for profitable single-course construction!

100% consolidation of subbase materials is often possible in only one pass with a Lima Roadpacker. High-speed vibrating action fills voids, keying materials to depths of 12 in. and more.

**Fewer courses, passes**

Single-course construction with a Roadpacker is more profitable, because you need lay fewer courses and make fewer passes than with less efficient consolidation equipment.

Working widths can be varied up to 13 ft., 1 in. End shoes fold up for highway travel at speeds to 30 mph. Roadpacker works at speeds from 20 to 95 fpm; consolidates up to 600 tons per hour. Works forward or in reverse, never shoves material. Self-propelled; gasoline or diesel engine. Easy to operate; good visibility. Optional widener attachment is available to replace trench rollers.

Lima Roadpackers are easy to maintain. Hydraulically operated vibratory shoe mechanisms are completely sealed from abrasive dust; maintenance free.

**Super model available**

Lima also offers a new 12-shoe *Super* Roadpacker for extra-high-production consolidation on large construction jobs such as superhighways, air bases and earth-fill dams. It has more than double the consolidating capacity of any multiple shoe vibratory machine!

Learn more about the profit-making features of Lima Roadpackers. See your nearby Lima distributor today or write to Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

***MODEL D ROADPACKER***—International favorite for high-speed, high-production consolidation on highway and airport construction.

LIMA

QUALITY
IS RECOGNIZED
THROUGHOUT
THE WORLD

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

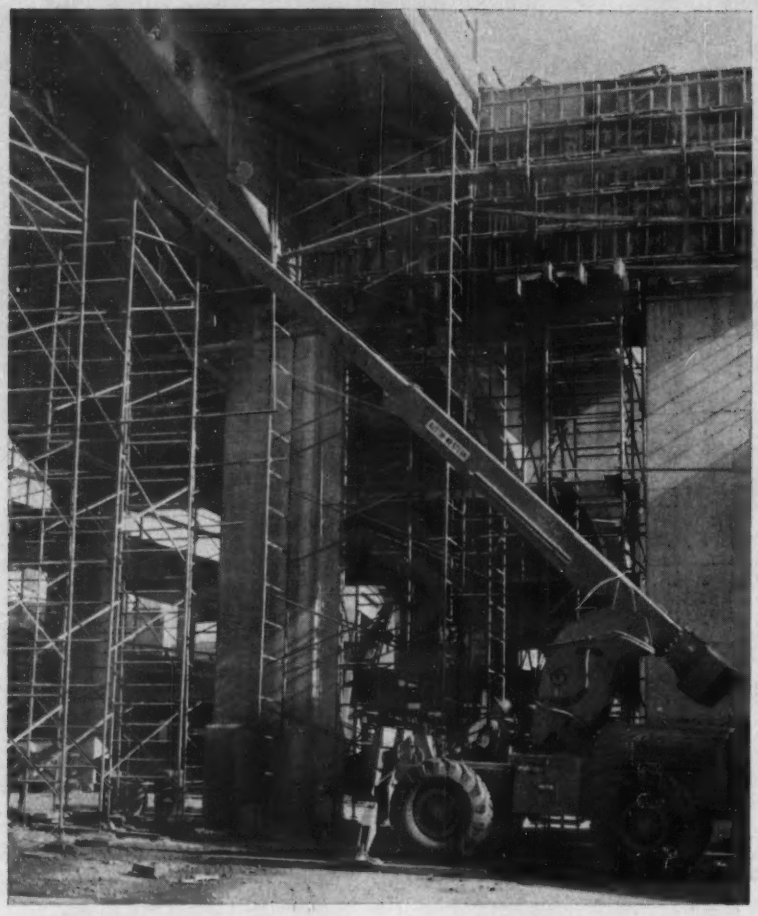
**LIMA** Construction Equipment Division, Lima, Ohio

BALDWIN · LIMA · HAMILTON

6024

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

BALDWIN BLH LIMA-HAMILTON



# A-W cranes reach 'hard-to-reach' places on S. F. Bay Bridge job

Peter Kiewit Sons chose an 11-ton Austin-Western Model 410 hydraulic crane for a difficult concrete handling application on a $1,572,000 San Francisco-Oakland Bay Bridge contract.

**Telescoping Boom**

It was chosen for its maneuverable all-wheel steering and low overhead requirements, which permitted it to work under the lowest point (15 ft.) on the job. Yet its boom, which telescopes from 25 to 48 ft., had the required length to reach work platforms almost 50 ft. above the ground. This live-acting boom easily lifted and "threaded" buckets of concrete through small openings in a maze of scaffolding. A 7-ton Model 210, with shorter 35-ft. reach, was also used.

Equipped with a personnel platform attachment, the cranes quickly and safely raised men to their working positions. They were also used for other tasks, involving hard-to-reach places, such as chipping concrete, demolition work on old support columns, and removing concrete forms.

**Lift, carry or place**

Hydraulic cranes are available in five models, 5 to 11-ton-capacity ranges. Self-propelled or stationery; wide range of optional attachments. Why not get facts and figures on these versatile rigs today. Contact your nearby Austin-Western distributor or write to our Aurora address.

**Austin-Western**

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

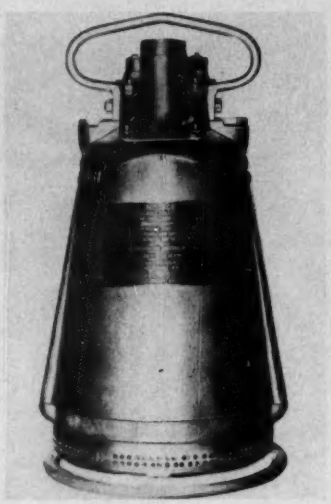
BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

*Circle* 150 *on Reader Service Card*


## EQUIPMENT NEWS...

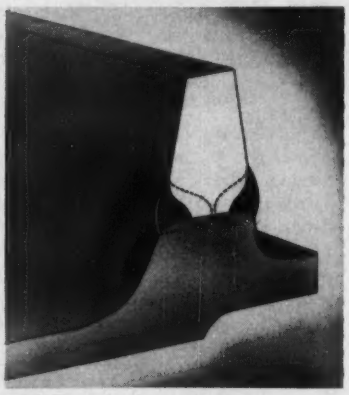
***For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.***



### *Submersible Pump Runs on House Current*

The Flygt 1½-in. B-38L electric submersible pump now is available in a 110-v version. It is equipped with a 1.8-hp motor that draws only 13 amp and can be operated from most house currents and portable light plants. The unit pumps as much as 85 gpm against heads up to 90 ft.—Flygt Corp., Hoosick Falls, N.Y.

*Circle* 315 *on Reader Service Card*



### *Grouser Bar*

Grip-Lug grouser bars for all types of tracks cut installation time because they are easy to weld. The shape of the bar is such that only one pass of the welding rod is required. The grouser material is alloy steel that work-hardens on the job.—Allied Steel & Tractor Products, Inc., 7835 Broadway, Cleveland 5, Ohio.

*Circle* 316 *on Reader Service Card*

*Circle* 151 *on Reader Service Card* ➤

**3½-yd. Lima 1250 shovel** loads blasted rock in Canadian quarry.

# Air-controlled Lima 1250 speeds rock loading

If you want to move more rock faster, easier and more profitably—Lima's the shovel for you!

Take the Lima 1250 as an example. Its main and auxiliary functions are air-controlled for smooth precision performance at full capacity operation. Torque converter, with either Diesel or electric power, reduces shock loading . . . makes heavy digging and rock handling easy on both machine and operator. The type 1250 can be knocked down for over-the-road transfer from job to job.

All Limas can be depended upon to boost profits, because they are top-quality machines designed and built to outperform other makes.

This also results in consistently high production with a minimum of downtime and years of trouble-free, low maintenance service.

There's a Lima type and size for every pit and quarry operation. Shovels to 8 cu. yds., draglines variable. Limas easily convert to cranes—up to 140 tons on crawlers. Choice of power; crawler, wagon or truck mounted.

It won't cost a cent to investigate Limas before you buy your next shovel or dragline—and it might pay off handsomely in increased profits and reduced maintenance costs. Talk to Lima owners. Ask for facts and figures from your nearby Lima distributor or write to Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA** Construction Equipment Division, Lima, Ohio

BALDWIN · LIMA · HAMILTON

6044

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

BALDWIN BLH LIMA-HAMILTON

New Model H-120 Hough "PAYLOADER" built to scoop 20% more load because of the great strength of USS MAN-TEN and "T-1" Steels.

## USS "T-1" and MAN-TEN Steels cut 1 ton of dead weight from this bigger PAYLOADER®

Two thousand pounds of weight have been chopped from the front end of this new Hough H-120 "PAYLOADER" by designing with USS "T-1" and USS High-Strength Steels. Result: one ton more capacity . . . increased reach and dumping height . . . better balance . . . stronger construction . . . lower operating costs.

This is another case where the greater tensile properties of the high-strength steels and the *extra* high strength of USS "T-1" Steel (100,000 psi minimum yield strength) made possible a superior designed machine. About 4,000 pounds of USS "T-1" Constructional Alloy Steel in ½" and ¾" plate and ½" x 5" bars are used in the boom arms, rocker arms, and bucket attachment brackets. The bucket is 5/16" USS MAN-TEN Brand High-Strength Steel—a 50,000 psi minimum yield point grade.

The bucket lift assembly was designed to a working stress, which, multiplied by a reasonable safety factor, comes up to the full minimum yield strength of "T-1" Steel. The 2,000 pounds of weight saved went directly into increased payload capacity—20%. The new "PAYLOADER" can handle 12,000 pounds instead of the 10,000 pounds of the experimental design. This is just what the customers wanted. No other steel offered such a high ratio of strength to weight.

The first 150 of these Hough tractor shovels are already giving outstanding service. More are being built. The combination of USS "T-1" and MAN-TEN Steels in the new "PAYLOADER" provides high strength with low total cost, lighter weight and freedom from maintenance.

For more information on any of these USS special steels, write to United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

The Frank G. Hough Co. is a subsidiary of International Harvester Co.

*USS, "T-1" and MAN-TEN are registered trademarks of United States Steel. "PAYLOADER" is a registered trademark of The Frank G. Hough Co.*

This mark tells you a product is made of modern, dependable Steel.

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
National Tube—Pittsburgh
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

**United States Steel**

## EQUIPMENT NEWS...

*For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.*

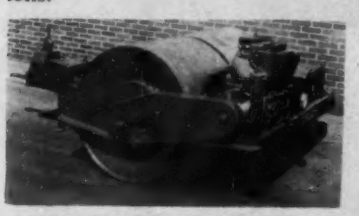
### Versatile Crane-Excavator

The Bucyrus-Erie 22-B Series Two crane-excavator is available as a crawler, truck, or wagon-mounted machine. It converts to a crane, dragline, clamshell, hoe, or shovel. The 25-ton truck-mounted rig can handle a 110-ft-long boom. A choice of 6x4, 6x6, or 8x4 carriers with either gas or diesel engines is available. Removable rear outriggers are standard, and hydraulic outriggers with both horizontal and vertical movement are optional. —Bucyrus-Erie Co., South Milwaukee, Wis.

*Circle* 317 *on Reader Service Card*

### Vibratory Roller

Tractor-drawn Zettelmeyer vibratory rollers are manufactured in Germany, but now are available in the U. S. The Model VA3 rollers weigh 7,400 lb and exert a compaction effort equivalent to 30 tons.



Vibration frequency is adjustable from 1,590 to 2,800 rpm. And each of the unit's two rolls rotates and vibrates independently. Rolling width is 82 in., and the roll diameter is 47 in. The rig is powered by an air-cooled diesel engine and is designed for rolling speeds of ½ to 2 mph. An automatic clutch engages the vibrator when engine speed exceeds 1,200 rpm.—Zettelmeyer, 10 E. 40th St., New York 16, N.Y.

*Circle* 318 *on Reader Service Card*

### Mobile Welder

Hobart's Weldmobile has been redesigned with increased ground clearance to improve its mobility over rough terrain. The rig's drawbar pull is rated at 2,000 lb.

Two models are offered. One is rated at 400 amp and is powered by a Chrysler 6-cyl industrial engine. The larger 600-amp model is powered by a Chrysler V8 industrial engine.

Both units supply 1 kw of 110-v dc auxiliary power for lights and electric motors. All controls for welding, traveling, and power supply are located on a special dashboard in front of the driver's seat.—Hobart Bros. Co., Hobart Sq., Troy, Ohio.

*Circle* 319 *on Reader Service Card*


A NEW NAME
FOR CONCRETE FORMS

SIMPLEX-WACO

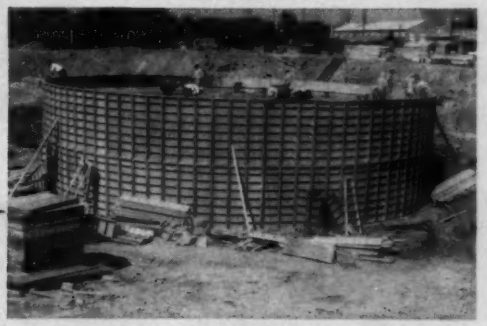
*Self-Aligning*

HEAVY DUTY CONCRETE FORMS

The name is new because Simplex Forms System, Inc. has purchased the concrete forms division of Waco Manufacturing Co.! And, while the basic Waco forms design is the same, you can count on years of Simplex experience to bring you the finest in quality and workmanship in Simplex-Waco forms.

Ideal for all types of concrete forming, these rugged, flexible forms will now be available on a wider scope through greater distribution.

Whether you buy or rent Simplex-Waco forms, you'll find that their built-in quality, standardized hardware, and proved durability will pay off in smooth, accurate walls job after job. Send for complete details today.



AN OUTSTANDING EXAMPLE
OF SIMPLEX-WACO SIMPLICITY

Approximately 6,000 feet of Simplex-Waco concrete forms were used to form the inside and outside walls of this ¼ billion gallon water storage tank in Dallas, Texas. Because of fewer loose hardware parts, storage for wedges in panels, and an exclusive alignment slot, these steel reinforced panels were securely erected in a minimum of time.

CHOICE AREAS AVAILABLE FOR DEALERS OR DISTRIBUTORS

SIMPLEX INDUSTRIAL FORMS, INC.
SUBSIDIARY OF SIMPLEX FORMS SYSTEM, INC.
5629 Industrial Avenue
Rockford (Loves Park) Illinois

*Circle* 153 *on Reader Service Card*

INTRODUCING
the all-new
MOBILE DRILL

APACHE

high-speed, production-type earth boring machine

Equally at home on the rolling plains or in rugged hill country . . . wherever *fast, economical* down-the-line erection of power lines, guard rails, fences and similar installations is required.

Tough, resourceful ally in the daily skirmish for profits. Hydraulic powered drill head spears down a full 10′, tilts 4-ways for angle boring or vertical boring on slopes.

Always travels light . . . even when fully equipped for any job from large diameter boring to belling and pole setting.

Available with special equipment . . . pole setter, wiggletail, turntable . . . that saves time and helps insure top profits despite difficult terrain and tight schedules.

The truck or tractor-mounted APACHE is easy to handle . . . hard to beat. It's designed and built to give you the stamina and dependability essential for top production . . . *top profits!* Write today for new 4-page brochure that gives complete details . . .

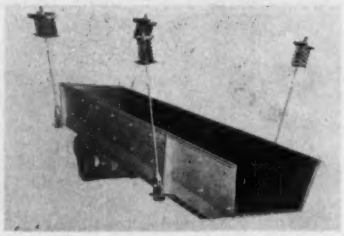
MOBILE DRILL®

**MOBILE DRILLING, Incorporated**
Dept. 29 • 960 N. Pennsylvania St. • Indianapolis 4, Ind.

*Circle 154 on Reader Service Card*


## EQUIPMENT NEWS...

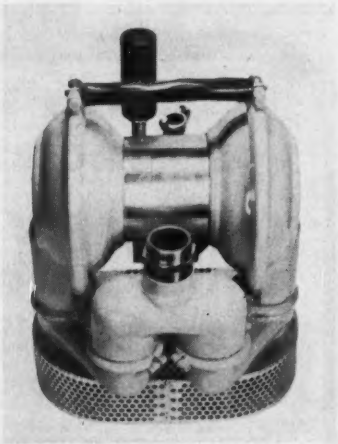
*For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.*



### *Vibrating Feeders*

Two unbalanced shafts in the vibrator mechanism of Link-Belt vibrating feeders insure high-capacity, controlled feeding of bulk materials. Each shaft is driven by a separate motor mounted directly on the vibrator frame. The vibrating and conveying action of the Straightline feeders can be altered by changing the amount of shaft unbalance. Two models of these feeders are available in 30 sizes. Capacities range up to 1,350 tph.—Link-Belt Co., Prudential Plaza, Chicago 1, Ill.

*Circle 320 on Reader Service Card*

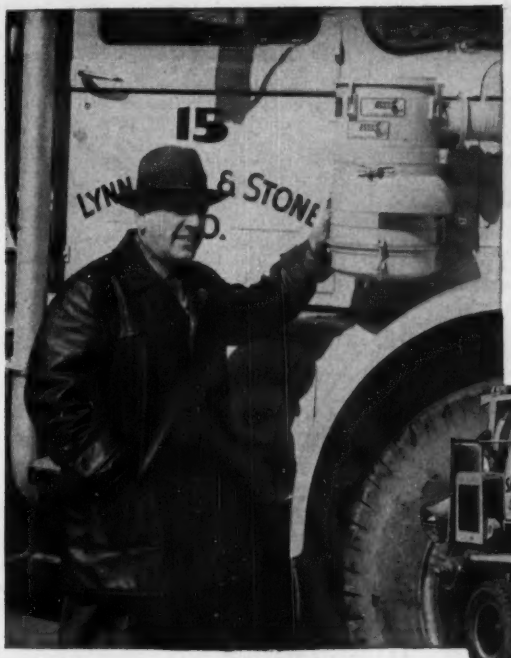


### *Double-Acting Diaphragm Pump*

The Layton self-priming diaphragm pump handles fluids with a high percentage of solids and it may be submerged completely or used with a suction hose. The 2-in. Model DA-4 weighs 79 lb and measures 21x16¼x16¼ in.

The pump consumes 100-psi air at a rate of 20 cfm and delivers 6,300 gpm at a 10-ft head. It can pump against heads of 100 ft or more.—Layton Co., Inc., 4749 S. Whitnall Ave., Cudahy, Wis.

*Circle 321 on Reader Service Card*

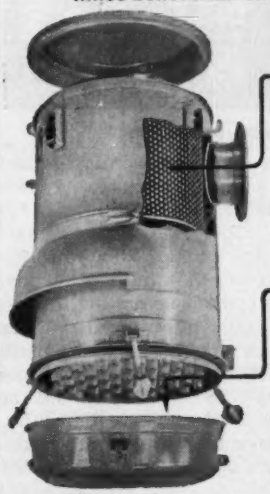



# "We've found the answer to our dust problem... Donaclone Air Cleaners"

reports Ray Beaulieu, Equipment Superintendent for Lynn Sand & Stone Co. of Swampscott, Mass.

## "Donaclones cut our operating costs 3 ways"

**Donaclones clean air 10 to 20 times better than oil bath types!**



**Only 2% of dust reaches Duralife paper filter!**

Embossing and pleating provide maximum filtration area. Controlled porosity gives 99.9% dust removal.

**98% of dust removed here!**

Cluster of Donaclone tubes make up highly-efficient primary centrifugal cleaning stage. Dust is ejected into dust cup for easy servicing.

Paper filters filter best, but it takes efficient pre-cleaning to make them practical from the servicing viewpoint. Note above that Donaclone tubes remove 98% of the dust. Only 2% reaches the Duralife filter, greatly increasing service life.

Mr. Beaulieu supervises a rigid maintenance program for his fleet of trucks. He doesn't need to guess at Donaclone benefits . . . *he knows*. Here are the 3 savings he reports.

**1. Extended engine life.** "With Donaclones we can tell there will be a difference in engine life. This is revealed by our regular oil analysis program. We expect to get many more hours of life from our truck and mixer engines."

**2. Cuts maintenance time.** "It takes us from 3 to 5 minutes to clean a Donaclone as against an hour to clean oil bath cleaners. In terms of labor alone, the savings are appreciable."

**3. Saves oil.** "Our oil bath cleaners used one gallon of oil every change."

Lynn Sand & Stone Co. has installed Donaclones on nine pieces of equipment. The company expects to have 35 pieces of equipment changed over within a year.

Longer engine life will cut your operating costs. Leading equipment builders and contractors have switched to Donaclones because of proved air cleaning performance. There's a dealer near you. Tear off coupon and mail today.

**Donaldson**
**COMPANY, INC.**
666 Pelham Blvd.
St. Paul 14, Minn.

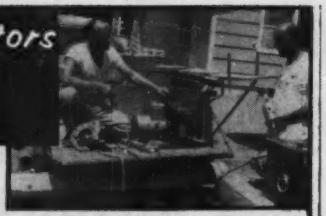
**CHECK AND MAIL**
☐ Send literature
☐ Have distributor call

Name_____

Clip and attach to your letterhead

*Circle 155 on Reader Service Card*

"Our WINCO Engine Generators are Portable, Dependable and Efficient!"



"Our houses go up in a day. Because they are lagged together, it is vital that we use an electric wrench for driving the many lags. We have two Winco Generators in constant use . . . bought the Winco because it has the AUTOMATIC CONSERV-er which allows the engine to idle when not in use. This feature alone has saved us many dollars in fuel economy."

Harold C. Orcutt
Orcutt Builders
Poughkeepsie, New York

WINCO®

Model
4B23S2D-FM9C
4000 Watt A.C.

MAXI-WATT Power Control means MAXIMUM POWER for heavy inductive loads . . . MAXIMUM EFFICIENCY for normal loads. Winco's exclusive features result in truly amazing performance. Complete line from 1500 to 12,000 Watt.
For complete details of the New WINCO PORTABLE ENGINE GENERATORS write Dept. CME-116.

ONLY WINCO® has ALL THESE FEATURES

MAXI-WATT
MAXIMUM EFFICIENCY ⊗ MAXIMUM POWER

WINCO® FULL POWER
(115V) 230V

Automatic CONSERV®
IDLING CONTROL
Extends Engine Life
Reduces Fuel Consumption
Lowers Maintenance Cost

WINCHARGER CORPORATION
Subsidiary of Zenith Radio Corporation
Sioux City, Iowa

Circle 156 on Reader Service Card

ACROW V FORM

Complete slab-forming SYSTEM gives you

POSITIVE...AUTOMATIC...
INSTANTANEOUS ALIGNMENT

and they save as much as
45% ON LABOR COSTS

Send for Literature

SYSTEM consists of only three basic parts: an ACROW SHORE, a support beam and a form panel. All three can be quickly assembled by any inexperienced workman. Nothing can possibly go wrong in the assembly; there is nothing that can come loose.

ACROW V FORM gives you speed, rigidity and safety in one combination. They are made in standard component sizes for every type of slab construction...Get all the facts.

ACROW CORPORATION OF AMERICA
231 WASHINGTON AVENUE, CARLSTADT, N. J.
In New Jersey: Phone WEbster 3-0450
In New York: Phone LOngacre 4-8753

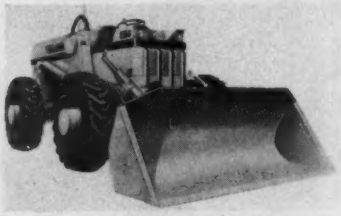
ACROW Denver, Inc., 1035 So. Huron St.
Denver, Colorado • Phone SP 7-5486

NEW YORK · CHICAGO · DENVER · TORONTO · MONTREAL

Circle 205 on Reader Service Card

## EQUIPMENT NEWS...

*For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.*



### Tractor Shovel Offers Three Engine Options

Either gasoline or diesel power from a choice of three different engines drives the Model 114 Trojan tractor shovel. It handles buckets with capacities from 1 to 1 2/3 cu yd and can lift 6,500 lb. Power shift transmission, power steering, and vacuum-boosted hydraulic power brakes are standard features.

Total weight of the unit is 13,000 lb; overall length is 17 ft 4 in. Maximum highway speed is 25 mph.—Trojan Div., The Yale & Towne Mfg. Co., Batavia, N.Y.

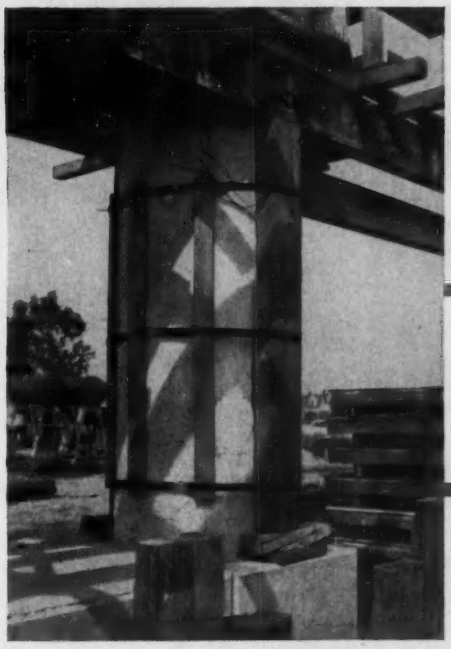
*Circle 322 on Reader Service Card*

### Improved Lift Trucks

Simpler controls, three-stage uprights, and a heavy duty oil clutch are now available for Hyster lift trucks. The Monotrol control system fits units of 3,000 to 5,000-lb capacity. It eliminates transmission control levers and allows the operator full-time use of his hands for maneuvering the truck and its load. The system combines forward-reverse selection and the throttle in a single foot pedal.

Three-stage uprights are available for 6,000 to 8,000-lb-capacity lift trucks. These uprights are handy for high stacking operations as well as working where vertical clearance is limited. And the oil clutch is offered as an optional item for units of 6,000-lb capacity. — Hyster Co., 2902 NE Clackamas St., Portland 8, Ore.

*Circle 323 on Reader Service Card*



Steel strapping's ideal for jobs like holding these temporary supports in place.

Model 3A heavy-duty stretchers illustrated. Other models available for lighter duty or special use.

Model C heavy-duty sealers illustrated make it easy to apply seals to heavy-duty strap.

Model CU-25 cutters easily sever any strap, including 2″ x .050″. Other models available for lighter duty.

# Use Signode steel strapping to speed and simplify tying, holding, handling

The tools are simple, rugged, dependable. The methods, as one user wrote, "are just common sense." Savings in concrete column form tying regularly run to about one-third over other conventional methods. But when you have Signode tools and steel strapping on the job, you can save on all these other jobs, and more:

- *Tying foundation wall forms*
- *Tying grade beam forms*
- *Tying forms for fireproofing steel beams*
- *Reinforcing of scaffolding*
- *Holding support timbers in place*
- *Bundling materials for loading, moving, handling...lumber, brick, reinforcing rod, wall panels, holding down machinery, etc.*

The Signode man near you can help you get the tools and strapping you need from the complete Signode line...can help you with methods if you wish. Call him today, or write:

**STRENGTH TABLE—SIGNODE STRAP REPRESENTATIVE STRAP SIZES**

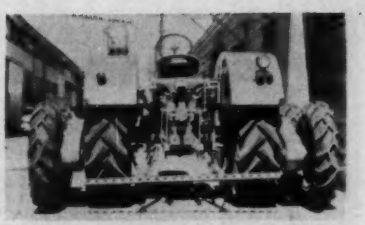
| Strap Size | Approx. Strength in Pounds | Approx. Cost per Foot* |
|---|---|---|
| ⅝″ x .020″ | 1,250 | 0.7¢ |
| ¾″ x .023″ | 1,725 | 1.0¢ |
| ¾″ x .035″ HD | 3,100 | 1.5¢ |
| 1¼″ x .035″ HD | 5,000 | 2.4¢ |
| 1¼″ x .050″ HD | 7,000 | 3.1¢ |
| 2″ x .050″ HD | 11,000 | 5.0¢ |

*Zone 1, 1-Ton Prices

**SIGNODE STEEL STRAPPING CO.**

2686 N. Western Avenue, Chicago 47, Illinois
Offices Coast to Coast.
Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

*Circle 157 on Reader Service Card*

### *Bogie Wheels Improve Traction*

Standard wheel tractors can be equipped with two sets of bogie wheels for better traction and increased flotation and stability. A pair of extra power wheels is attached outside each of the tractor's drive wheels and is chain-driven from the main axle. The bogie follows the ground contours at all times. The extra wheels can be removed easily when the tractor is doing lighter work and operating in confined areas.—Young Iron Works, 2959 1st Ave. S., Seattle 4, Wash.

*Circle 324 on Reader Service Card*

### *Puncture-Proof Tire*

Solid rubber and nylon and two wire reinforcing bands are the only materials that make up a new type tire designed for off-the-road equipment. According to the manufacturer, the rubber-nylon mixture gives the solid Grizzley tire a ride similar to that of pneumatic-type tires. The new tire is available for a variety of popular types of construction and materials handling equipment.—Bearcat Tire Co., 442 W. Garfield Blvd., Chicago 9, Ill.

*Circle 325 on Reader Service Card*

### *Vibrating Screens*

Three new sizes of horizontal vibrating screens have been added to the Universal Screenmaster line. Included are 5x12, 5x14, and 5x16-ft units.

All are available with 2, 2½, or 3 decks. A rubber-bushed phasing bar and air springs are standard on all of them.—Universal Engineering Corp., 625 "C" Ave. NW, Cedar Rapids, Iowa.

*Circle 326 on Reader Service Card*

# 9 Euclid Scraper Models . . .

## *one is just right for your job!*

Whatever your work may be — from small grading jobs such as land improvement, secondary road building or plant site preparation to the million yard-and-over contracts — there's a "Euc" that matches the job. With three types and nine models, Euclid offers the most modern and complete line of scrapers in the industry.

There are six-wheelers with struck capacities of 12, 18, 24 and 33 yds. . . . all-wheel drive "Twins" of 14 and 24 yds. . . . and three overhung engine models of 7, 12, and 21 yds. For facts and figures proof that Euclid Scrapers are your best investment, call the Euclid dealer in your area.

EUCLID DIVISION OF GENERAL MOTORS, CORP., CLEVELAND 17, OHIO

GM GENERAL MOTORS EUCLID

**EUCLID EQUIPMENT**

*FOR MOVING EARTH, ROCK, COAL AND ORE*

*Circle* 158 *on Reader Service Card*

# WEIGH...BATCH

*at the press of a button*

Preliminary and final cutoffs...one material, two materials or more. DETECTO automatic cutoffs provide fast, accurate weight control.

*Write for specifications to:*

**DETECTO SCALES, INC.**
Dept. Y-10 540 Park Ave., Brooklyn 5, N. Y.

*Circle 206 on Reader Service Card*

# NEW 3/4-ton Pull-A-Way

**Added to WRIGHT TYPE "C" LINE!**

**FOUR SIZES • ¾, 1½, 3 and 6 Tons**

**FEATURES**

- Lubricated for life
- Hooks are drop-forged
- Special alloy-steel chains
- Chain sheaves of drop-forged alloy steel
- Gear teeth cut to precision limits
- Load brake is dependable and safe
- Weights:
  ¾-ton, 12½ lbs.
  1½-ton, 23½ lbs.
  3-ton, 36½ lbs.
  6-ton, 63 lbs.

New 3/4-ton model
• VERSATILE
• LIGHTWEIGHT

*Write to York, Pa., office for complete information*

Wright Hoist Division
AMERICAN CHAIN & CABLE
York, Pa., Bridgeport, Conn.

*Circle 207 on Reader Service Card*


## New Product Briefs

*For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.*

**FROST CHISEL**—Arrow mobile hydraulic hammers now can be equipped with a frost chisel that can be dropped with a force of up to 9,000 ft lb.—Arrow Mfg.

*Circle 327 on Reader Service Card*

**HARD-FACING ELECTRODE** — Stoody 1105 electrode produces deposits with 36 to 42 Rockwell C hardness. Electrode diameters range from 5/32 to 1/4 in.—Stoody.

*Circle 328 on Reader Service Card*

**LAND CLEARING RAKE**—Model RF-3 rake is available for Euclid C-6 and TC-12 tractors. Rake's teeth are laterally adjustable and reversible.—Rockland.

*Circle 329 on Reader Service Card*

**STEERING BOOSTER** — Torque unit for Adams (No. 312, 414, 512, 550) and Allis-Chalmers (AD-3, AD-4) motor graders is available from Cat dealers.—Rivinius.

*Circle 330 on Reader Service Card*

**CONCRETE BUCKET**—Available sizes are ½, ¾, 1 yd. Gear-controlled clam shell gates are self-locking and have adjustable discharge controls.—Heltzel.

*Circle 331 on Reader Service Card*

**DROP DECK TRAILER**—Use of USS T-1 high-strength steel reduces trailer weight by as much as 5,000 lb so bigger loads can be carried. —Talbert Trailers.

*Circle 332 on Reader Service Card*

**UTILITY CRANE** — Small hydraulic crane for trucks, loading platforms, or shop lifts 1,000 lb with 38-in. boom. Maximum boom length is 57½ in.—Ausco.

*Circle 333 on Reader Service Card*

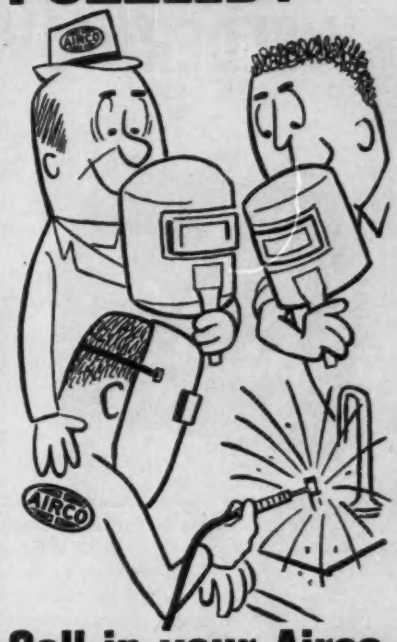
**WELDING POWER SOURCE**—Transformer-type, 300-amp unit with gas and water controls is designed for use with tungsten arc welding equipment.—Airco.

*Circle 334 on Reader Service Card*

**POWER TROWEL**—Four-blade, 44-in. trowel is powered by 5.75-hp gasoline engine. Combination float-finish blades (8x17½ in.) are standard.—Remington Arms.

*Circle 335 on Reader Service Card*


# WELDING JOB GOT YOU PUZZLED?




## Call in your Airco Distributor...

Expert on oxyacetylene welding, stick electrode or gas shielded arc welding

Some of today's welding jobs are pretty tricky. When one of these jobs just won't go right, call in your Airco Distributor. Chances are that he or one of his salesmen has handled a job much like it. He can help you. Because he knows all the practical ins and outs of welding and he is backed by Airco's unexcelled experience.

For the equipment you need, choose from the **AIRCO** quality line of gas welding and cutting equipment – arc welding equipment and arc welders – gas-shielded arc welding process equipment – flame cutting machines – high purity and rare industrial gases – electrodes – supplies and accessories.

Phone your nearby Airco Distributor. He's listed in your Classified Telephone Directory under "Welding Equipment and Supplies."

**AIR REDUCTION**

... represented by over 700 Authorized Airco Distributors from Coast to Coast

*Circle 159 on Reader Service Card*

# NEWEST OF THE GREAT NEW MILLER WELDER/POWER PLANTS

AD-225-L GASOLINE ENGINE-DRIVEN AC/DC WELDER/POWER PLANT

**This is as close to being "an all-around hand" as you're ever likely to find. For instance:**

**A-C or D-C WELDING. The AD-225-L produces 300 amperes at 30 volts a-c or 225 amperes at 30 volts d-c – both at 100% duty cycle. Ample open circuit voltage gives superior results with a-c, d-c or a-c/d-c electrodes.**

**METALLIC INERT GAS WELDING. Using the d-c side of the AD-225-L, and with new style hand guns feeding small diameter wire from spools, aluminum, mild or stainless steel may be welded by the MIG process. Power for the gun is provided by the 115 volt d-c outlet.**

**A-C POWER PLANT. As an a-c power plant, this model produces 7 KW of 115/230v single phase 60 cycle current.**

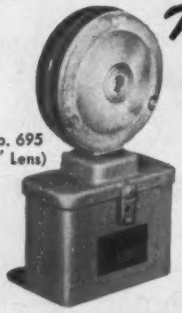
**AUXILIARY D-C POWER. While welding, the AD-225-L delivers 1 KW of 115v d-c which is ample for operation of flood lights, power tools, etc.**

***Complete information sent promptly.***

**miller** ELECTRIC MANUFACTURING CO., INC., APPLETON, WISCONSIN

Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal

*Circle* 160 *on Reader Service Card*



No. 695 (5" Lens)

***Now...*** **the New No. 695 *Visi-flash* joins the famous DIETZ family!**

- **Large 5" lens with reflex reflector for added safety**
- **Die-cast head for greater strength, rigidity and stability**
- **Available with plug-in or switch type circuits**

**Write for details and catalog No. 55 showing the complete Dietz Visi-flash Line.**

**R. E. DIETZ Company Dept. 611 Syracuse, N. Y.**

*Circle* 208 *on Reader Service Card*


## NEW PRODUCT BRIEFS

***For more information, circle the key number found at the end of each item on the READER SERVICE CARD which is just inside the back cover.***

**ELECTRIC HOIST**—Powered by 6, 12, or 24-v batteries, ¾-ton hoist measures 17x11x8 in. and is equipped with a self-locking worm-gear drive.—Beebe.

*Circle* 336 *on Reader Service Card*

**MATERIALS SPREADER**—Two pins attach dual spinner tail gate unit to truck dump body in a few minutes; no bolts, nuts, or tools are needed. —Central Engineering.

*Circle* 337 *on Reader Service Card*

**PRE-FAB BUILDING**—Handy as a field office, portable aluminum shed on skids is insulated, comes in sizes ranging from 8x24 ft to 12x60 ft.—Midway Sales.

*Circle* 338 *on Reader Service Card*

**SPRAYBARS**—New bituminous distributors feature full-circulating spraybars with instant start and stop, no-drip shut-off, and instant reverse suction.—Rosco.

*Circle* 339 *on Reader Service Card*

**SCREENING PLANT** — Model 130 portable belt conveyor is available with belt widths from 18 to 42 in. and lengths from 40 to 70 ft.—Atlas Conveyor.

*Circle* 340 *on Reader Service Card*

**ADJUSTABLE GANTRY**—Magic-Pole portable gantry is available with spans up to 30 ft, heights up to 17 ft, capacities up to 4 tons.—B. E. Wallace Products.

*Circle* 341 *on Reader Service Card*

**TRACTOR SHOVEL OPTIONS**—Michigan Model 125A is available with either GM or Cummins diesel or Waukesha gasoline engines, also a range of bucket sizes.—Clark.

*Circle* 342 *on Reader Service Card*

**CONVEYOR**—Portable unit consists of reciprocating feeder, conveyor, and vibrating screen with engine and drive at ground level. It produces 50 yd per hr.—Lippmann.

*Circle* 343 *on Reader Service Card*

**BLASTING CAPS**—Rockmaster electric caps are available with 38 millisecond delay periods for a single blast. All 38 fire within 3.250 sec. —Atlas Powder.

*Circle* 344 *on Reader Service Card*

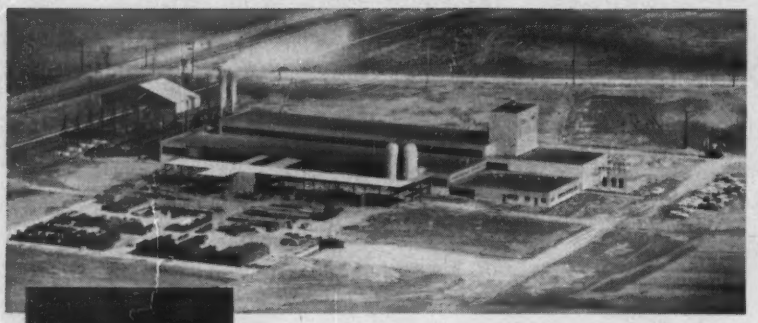
## BLAST HOLES FOR WORCESTER DIVERSION PROJECT DRILLED WITH BETHLEHEM HOLLOW

This 16-ft-diameter tunnel was driven a total of 4150 ft for the Worcester Diversion Project. This was a flood-control job, constructed recently on the Blackstone River, near Auburn, Mass. The project was under the supervision of the New England U. S. Army Engineers Division, Corps of Engineers. The holes for the blast charges were bored to an average depth of 6 ft, using Bethlehem Hollow Drill Steel. The contractor was Kero-Curly Corp. Bethlehem Hollow Drill Steel is ideal for all types of rock drilling because of its economy and dependability. It is furnished in Carbon and Ultra Alloy grades in rounds, hexagons, and quarter octagons, in lengths from 18 ft to 27 ft.

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.
Export Distributor: Bethlehem Steel Export Corporation

**BETHLEHEM STEEL**

BETHLEHEM STEEL



500 TONS OF CASTINGS DAILY!

With the recent opening of plant #2, shown above, our production potential of Gray and Ductile Iron Construction and Industrial Castings has now reached a maximum of 500 tons daily. This capacity, plus 15,000 patterns, plus a good on-hand supply of standard castings, plus 90 years experience in the business, is your assurance of prompt delivery, superior quality, complete uniformity and practical economy.

* * *

New and fully illustrated 168-page catalog of construction castings will be sent promptly upon request.

NEENAH FOUNDRY COMPANY
NEENAH • WISCONSIN
Chicago Office: 5445 North Neva Avenue, Chicago 31, Illinois

*Circle 162 on Reader Service Card*

EFCO Steel Forms
available with
RETURN OPTION

Satisfaction is guaranteed when you purchase EFCO Lifetime Steel Forms for your concrete forming needs.

NEW CATALOG

Describes and illustrates EFCO Steel Forms and accessories with examples of many uses. Send coupon for your copy.

EFCO ECONOMY FORMS

MAIL TODAY

Economy Forms Corp.
Box 128-N, H. P. Station
Des Moines, Iowa

Please send new catalog on EFCO Steel Forms, and address of nearest sales office (there are 29 coast to coast).

Name_____
Firm name_____
Address_____
City_____ State_____

*Circle 209 on Reader Service Card*

YOUR POSTMASTER SUGGESTS:

• AVOID THE AVALANCHE OF LAST MINUTE HOLIDAY MAILINGS!

• TO ASSURE PROMPT DELIVERY OF ALL CHRISTMAS PARCELS AND GREETING CARDS BEFORE THE HOLIDAY

—MAIL EARLY!—

"FOR DISTANT OUT-OF-TOWN POINTS, MAIL BY DEC. 10, 1960"

"FOR DELIVERY IN YOUR LOCAL AREA, MAIL BEFORE DEC. 16, 1960"

# New Publications

*These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy of the items you want, circle the appropriate numbers on the READER SERVICE CARD just inside the back cover.*

**WIRE REINFORCEMENT** — Design of Concrete Pavements for Airports, 96-p, offers design criteria for reinforced PCC pavement to handle all kinds of planes. Building Design Handbook, 168-p, describes the ways in which steel wire fabric is put to use and covers the application of heavy welded wire fabric in the design of structures. Both books are free if requested on an organization's letterhead.—Wire Reinforcement Institute, 1049 National Press Bldg., Washington 4, D.C.

*Circle 345 on Reader Service Card*

**LOADER**—The new 9,000-lb capacity W-12 front-end loader is detailed in a 16-p catalog. Interchangeable buckets range from 1⅝ to 3½ cu yd.—J. I. Case Co., Racine, Wis.

*Circle 346 on Reader Service Card*

**DRILLS** — A 12-p bulletin contains data and operating information on a complete line of crawler-mounted drilling equipment. Bulletin CDAT-1 covers drill carriers, drill feeds, and various types of drills. Equipment combinations are also shown.—Gardner-Denver Co., Quincy, Ill.

*Circle 347 on Reader Service Card*

**ROLLERS**—A 4-p bulletin covers the KT-24E (8-12 ton) and KT-25E (10-14 ton) tandem rollers that are offered with torque converter drive as standard equipment. — Buffalo-Springfield Co., Springfield, Ohio.

*Circle 348 on Reader Service Card*

**ADMIXTURE**—Trimix, a liquid admixture for concrete and mortar, is described in a 12-p booklet. It accelerates hardening, increases early strength, and reduces water requirements.—Sonneborn Chemical & Refining Corp., 404 Park Ave. So., New York 16, N.Y.

*Circle 349 on Reader Service Card*

**CRANE** — An 8-p catalog illustrates the American 900 series crawler crane. The crane features air controls, has a rated lifting

# MUSCLES under the mainline!

## Rodgers Hydraulic Jacks

### *push three 88 foot tiles under railroad without disrupting traffic*

Two 200 Ton Rodgers Hydraulic Jacks were selected by W. J. Irwin & Sons, Inc., Tonawanda, N. Y. for driving three sewer pipes of 96" I. D. reinforced concrete tile 88' under the mainline of the New York Central Railroad. Part of a 2½ million dollar sewer contract on the Tonawanda West Side Drainage Project, the "push pipe" method was preferred because it permitted unrestricted use of the rail right-of-way overhead.

**TIME: 34 DAYS**—Actual jacking time consumed 34 days based on three-eight hour shifts a day. Each sewer took eleven 8-foot tile sections. The *First Line* required 14 days; the *Second Line* 11 days and the *Third* only 9 days.

Steel rails cradle tile sections as twin Rodgers Jacking Cylinders press against the wooden jacking frame. Heavy grease on outside of tile cuts down friction—for easier sliding.

Rear of excavation pit showing Hydraulic Jack against abutment wall. At this stage the ram is extended approximately ⅓ of the 48" ram travel.

**ADVANTAGES OF HYDRAULIC JACKING**—This job was handled at low cost and was unique due to the short time required for completion and the fact that rail service overhead continued uninterrupted throughout the tunneling project below. Entirely different from conventional tunneling, the "push pipe" method also provides greater safety to workers from cave-ins since they work inside the tile that is being driven.

**JACKING PROCEDURE**—A service pit 28' deep by 22' wide by 40' long was excavated to house the jacking equipment. A pair of 75 lb. steel rails placed on the concrete pit floor cradled the tile sections and acted as a guide for the jacking operation. Type of soil encountered in all three pipes was a mixture of heavy yellow and blue clay.

**EQUIPMENT USED**—Two 200 Ton Rodgers Hydraulic Jacks with 48" ram travel were powered by a Rodgers Model D2 electric driven hydraulic pump located at the top of the excavation pit. A valve panel located at the bottom of the pit permitted accurate control of the jacking operation.

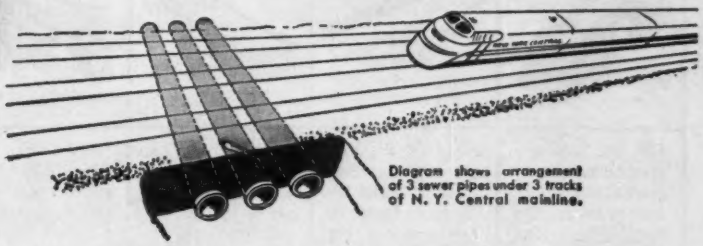


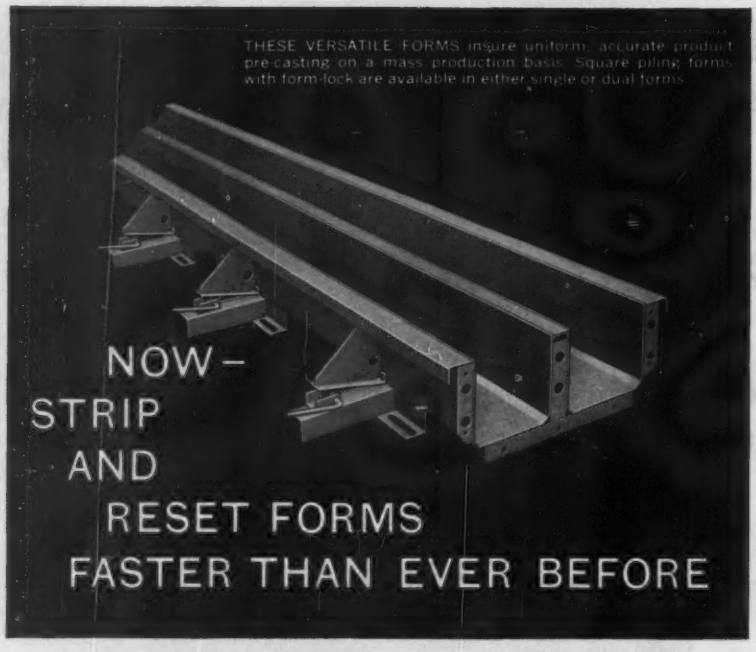
Diagram shows arrangement of 3 sewer pipes under 3 tracks of N. Y. Central mainline.

**If you'd like more details about this job, write for free copy of Bulletin 331.**

**Rodgers Hydraulic Inc.**

7403 Walker St. • Minneapolis 26, Minnesota

*Circle 163 on Reader Service Card*


THESE VERSATILE FORMS insure uniform, accurate product pre-casting on a mass production basis. Square piling forms with form-lock are available in either single or dual forms.
NOW –
STRIP
AND
RESET FORMS
FASTER THAN EVER BEFORE

## New 1960 Form-Crete forms feature more handling speed, easier stripping, longer service

*Time is what you save when you cast prestressed* members with FMC's new line of steel forms for 1960. Time in terms of faster stripping, faster resetting and fewer man hours per job. FMC has introduced many refinements to the pioneer line of steel forms, refinements that make them now, more than ever, **the way to cast – at a profit.** New form-lock for fast and perfect alignment, and new tilt back-designed forms for quick product removal are only a few of the features that make Form-Crete forms your best bet. Clip the coupon and get the full story from your local Form-Crete man.

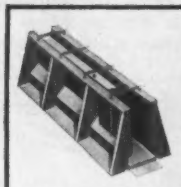
FOOD MACHINERY AND CHEMICAL CORPORATION FC 280
Form-Crete Department – Lakeland, Florida FC1
Gentlemen: Please send me your latest catalog on Form-Crete forms.
NAME_____
ADDRESS_____
CITY_____ STATE_____

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

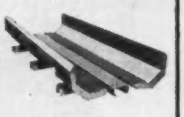
*Putting Ideas to Work*

**Form-Crete® Department**

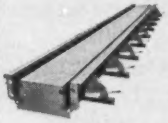
General Sales Offices: Lakeland, Florida



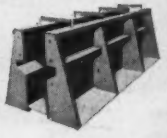
FOR USE with any acceptable type of prestressing in current practice, the Form-Crete Bridge Beam form complies with joint P.C.I.–AASHO – recommendations. Form lengths in 10 foot sections, combinations up to 60 feet.



HOLLOW PILINGS are easily cast in these octagonal piling forms by use of tubing and piling headers. Unique tilt back design permits fast, easy product removal, cleaning and oiling of forms.



CHANNEL FORMS, with patented form-locks which allow sides to flex for quick and easy removal of product. Self-contained channel understructure insures extra rigidity and strength in this outstanding form.



FORM-CRETE LEDGER BEAM FORMS provide fast, accurate casting of roof support beams. Riser blocks can be employed to vary depth of beam; forms are lock-up type with reinforced self aligning pilot liners.

*Circle* 164 *on Reader Service Card*


## NEW PUBLICATIONS . . .

***For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.***

capacity of 110 tons, and can handle boom lengths up to 270 ft, plus jib.—American Hoist & Derrick Co., St. Paul, Minn.

*Circle* 350 *on Reader Service Card*

**HEAVY EQUIPMENT** — A 32-p catalog, Bulletin 150A, shows the complete line of Michigan construction and materials handling equipment: tractor shovels, dozers, scrapers, loggers, and excavator cranes. It includes the 600-hp Model 480 tractor dozer and models 55A, 55B, and 85A in the tractor shovel line. — Clark Equipment, Benton Harbor, Mich.

*Circle* 351 *on Reader Service Card*

**TRACTORS**—A 24-p booklet covers front-end loaders, fork-lift trucks, and a line of utility tractors with a variety of attachments for digging, trenching, and earth-moving.—Massey-Ferguson, 1000 South West St., Wichita 13, Kan.

*Circle* 352 *on Reader Service Card*

**ENGINES**—Four, six, and eight cylinder engines are detailed in a 4-p pamphlet. Of these 27 units, which are available from stripped engines to complete power units, 10 are diesels. Horsepower ratings range from 16.4 to 385; weights from 279 lb to 6,045 lb.—International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

*Circle* 353 *on Reader Service Card*

**CRANES**—A 12-p catalog covers the 60-ton Lorain Moto-Crane MC-760 and explains, with diagrams, the operation of power-set outriggers. Another 12-p catalog describes the Lorain 50, a 1-yd crawler-mounted shovel-crane.—Thew Shovel Co., Lorain, Ohio.

*Circle* 354 *on Reader Service Card*

**SHEETING** — A new system of horizontal sheeting for supporting deep, tight excavations is described in a 4-p design manual. The sheeting is applicable to foundations up to 50 ft deep. Test data shows the strength the system affords. — Contact Sheeting, 55 East 43 st., New York 17, N.Y.

*Circle* 355 *on Reader Service Card*

**TRACTOR ATTACHMENTS**—A 6-p bulletin covers the complete line of Parsons-Shawnee trencher and utility tractor attachments. It includes backhoe, Hydroclam, front end loaders, rear blades, and end plates for blades. A 4-p bulletin covers the line of rear blade attachments for utility tractors. —Parsons Co., Div. of Koehring Co., Newton, Iowa.

*Circle 356 on Reader Service Card*

**COMPONENTS**—A 12-p bulletin features both above-ground and underground structural components. Nine case histories illustrate the use of liner plates, ring walers, anchor bolts, tie rods, cold bent roof supports, and ribs and posts.—Commercial Shearing & Stamping Co., 1775 Logan Ave., Youngstown 1, Ohio.

*Circle 357 on Reader Service Card*

**CRANES** — Catalog W-102 gives complete descriptions and specifications of all sizes of truck-mounted and floor model cranes from 500 to 4,000-lb capacities. A line of hand-operated winches is also shown, with capacities from 500 to 2,000 lb.—H. S. Watson Co., 1316 67th St., Emeryville 8, Calif.

*Circle 358 on Reader Service Card*

**CONCRETE**—A 4-p bulletin (P-79) details the part played by Pozzolith in casting a unique post-tensioned concrete structural system for an art gallery in Utica, N.Y. Text and photos tell how the structure was erected and how special concrete was designed, controlled, and placed.—The Master Builders Co., Cleveland, Ohio.

*Circle 359 on Reader Service Card*

**ROCK DRILL** — A descriptive 2-p sheet gives data on the Silver Bullet rock drill in the medium-weight 55-lb class. The sheet includes specifications for the unit, which can drill both primary and secondary blast holes 18 ft deep. —The Davey Compressor Co., Kent, Ohio.

*Circle 360 on Reader Service Card*

**BACKHOES**—Bulletin BH-60-1 covers all Schield Bantam backhoe attachments and options for the firm's crawler-mounted, carrier-mounted, and self-propelled crane-excavators. Specifications and digging ranges for standard and long-boom backhoes are included. — Schield Bantam Co., Waverly, Iowa.

*Circle 361 on Reader Service Card*


# *Free* GRACO IDEA BOOK ON CONVOY LUBE UNITS!

- Illustrates latest Graco Convoy Luber equipment.
- Shows typical luber layouts with detailed diagrams.
- Provides complete specs on Graco field luber units.
- Lists dozen of accessories for convoy luber work.

**DESIGN YOUR OWN LUBE SERVICE TRUCK,** fully equipped with grease, oil and air components you need! Get complete information from Graco's new Convoy Luber book—28 big pages that tell you how to do it the best and quickest way.

See how to "job-plan" your Convoy Luber in six easy steps . . . get valuable charts, diagrams and specifications . . . learn about the latest Graco pumps, hose reels, and other equipment that will make your lube truck the best on the road.

**SEND FOR YOUR COPY** of Graco's Convoy Luber handbook *today*—it's a valuable free guide you'll want to read from cover to cover!

**GRACO**

**GRAY COMPANY, INC.**
1145 Graco Square • Minneapolis 13, Minnesota
*(See phone book yellow pages "Lubricating Devices" for Graco Suppliers)*

*Circle 165 on Reader Service Card*

# CONTINENTAL RED SEALS ARE ENGINEERED TO FIT THE JOB

Rarely will you find an item of industrial, construction or road building equipment that won't run best and cheapest on Continental Red Seal power. The reason lies in specialization—in Continental's long-standing policy of engineering each model precisely to the work to be done. Whatever the machine . . . whatever its job . . . you can bank on it for abundant power at the speeds consistent with low fuel and upkeep cost.

Continental's ruggedness and rightness of design are helping to build prestige for more and more of the leading builders of specialized power equipment. It's wise when buying equipment of this type, to choose a make with dependable Red Seal power—power backed by specialized experience dating from 1902.

**SERVICE AND PARTS AVAILABLE EVERYWHERE**

CONTINENTAL MOTORS — Powered at the Nation's — AMERICA'S STANDARD

**Continental Motors Corporation**
MUSKEGON • MICHIGAN

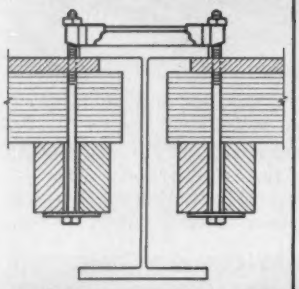
*Circle 210 on Reader Service Card*

# SUPERIOR HANGERS...

## Designed for Fast Erection and Easy Stripping

**FOR STEEL BEAMS AND CONCRETE GIRDERS**

**ADJUSTS FROM TOP OF DECK**



NEW

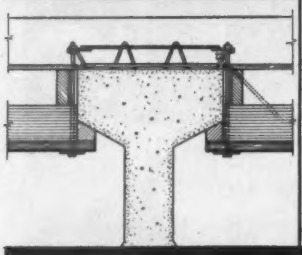
## Pres-Steel Hanger

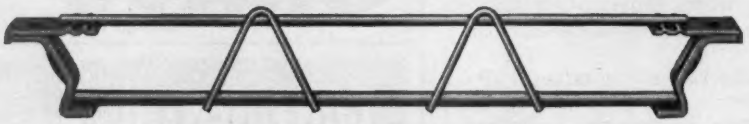
*(Pat. pending)*

This newly developed Pres-Steel Hanger combines the desirable features of conventional hangers, yet costs less! Assembly is simple, ½" Coil Bolts are passed up through the hanger—no threading is necessary—and a square coil nut is applied. All adjustment is made conveniently from the top of the deck. The foot of the hanger has a saw tooth edge which bites into the flange upon application of a load, preventing any movement of the hanger. The flat top provides even bearing for the nut and the bolt hole is so formed that there is no binding of the bolt on removal. Pres-Steel Hangers are also made to take the bolt or coil rod at 45°.

These economical hangers have a safe working load on steel beams of 8,000 lbs. (ultimate capacity 14,500 lbs.). On concrete girders the safe working load is 6,000 lbs. (ultimate capacity 9,000 lbs.).

**ADJUSTS FROM TOP OF DECK**



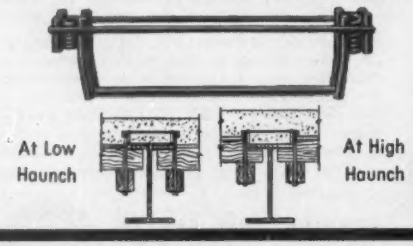


## Prescon Hanger

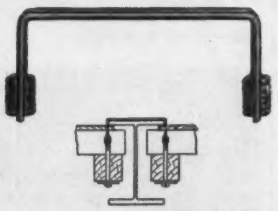
This unique hanger provides hanging points cantilevered away from the concrete girder sides. The forms are hung from coil bolts threaded into heavy square coil nuts bearing on the top plate. Provision is also made for haunch forming above the girder. Adjustment is made conveniently from the TOP of deck. Simultaneous overhanging slab or curb forming is accomplished with coil rod and wing nut at 45°. Available in two types—6M (6,000 lb. safe working load) and 10M (10,000 lb. safe working load). The use of Prescon Hangers on concrete girders eliminates hazardous, makeshift methods.

**OTHER SUPERIOR HANGERS FOR HANGING FORMS ON BRIDGE SUPERSTRUCTURES**

### Haunch Coil Hanger Frame




### Coil Beam Saddle



### Wire Beam Saddle

**SUPERIOR CONCRETE ACCESSORIES, INC.**

**9301 King Street, Franklin Park, Illinois** *(A Suburb of Chicago)*

*New York Office* 39-01 Main St. Flushing 54, N. Y. / *Houston Office* 4101 San Jacinto Houston 4, Texas / *Pacific Coast Plant* 2100 Williams St. San Leandro, Calif.

**WORKING PARTS** Returnable for credit.

*For details request New CATALOG 700*

*Circle 166 on Reader Service Card*

# Advertisers' Literature

*Listed below is free material offered in this issue's advertisements received up to Oct. 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.*

**AIR-COOLED ENGINES**—Bulletin S-251 gives details of heavy-duty air-cooled engines ranging from 3 to 56 hp.—Wisconsin Motor.

*Circle 362 on Reader Service Card*

**STEAM CLEANER** — Here's information on the new 3500 Hypressure Jenny steam cleaner for heavy-duty rigs.—Homestead Valve.

*Circle 363 on Reader Service Card*

**REMOTE CONTROLS**—Bulletin DH-183 describes Tru-Lay push-pull remote controls for heavy equipment.—American Chain & Cable.

*Circle 364 on Reader Service Card*

**POWER CHAIN SAW**—Full information is available on seven professional models of portable power chain saws, $149.95 up.—McCulloch.

*Circle 365 on Reader Service Card*

**LUBE EQUIPMENT**—A 28-p handbook illustrates portable lube units and shows typical lube layouts with detailed diagrams.—Gray Co.

*Circle 366 on Reader Service Card*

**STEEL-PLY FORMS** — How steel-ply forms cut time and cost estimates for a 25,000-yd concrete job is told in a brochure.—Symons.

*Circle 367 on Reader Service Card*

**MOTOR GRADER** — Literature gives data on the Model 503 motor grader with a 58-hp diesel engine and 4-wheel tandem drive.—Galion.

*Circle 368 on Reader Service Card*

**PUMP** — Details of the new 3PN pump that pumps 28,000 gph at 10-ft lift with a 4-in. hose is given in a catalog.—Jaeger Machine.

*Circle 369 on Reader Service Card*

**ROLLER CHAIN** — Folder provides data and prices of Tuf-flex roller chain for crawler drives and other equipment.—Diamond Chain.

*Circle 370 on Reader Service Card*

**ENGINES** — An illustrated booklet gives information about 4 to 24-hp engines that serve a wide range of equipment.—Kohler Co.

*Circle 371 on Reader Service Card*

**TUNNEL EQUIPMENT** — Bulletin No. 23 shows installation of shields, air locks, lock doors, tunnel cars, and other tunneling items.—Mayo.

*Circle 372 on Reader Service Card*

**TRENCHER** — Bulletin L-110 tells how the J-40 trencher dug 3 to 5 ft deep through shale and rock for a drainage job.—Cleveland.

*Circle 373 on Reader Service Card*

**HANGERS**—Catalog 700 describes a variety of hangers for supporting deck forms from steel beams and concrete girders.—Superior.

*Circle 374 on Reader Service Card*

**HIGH TORQUE BRAKES** — A booklet presents information on Hi-Torque brakes designed for heavyweight off-the-road vehicles.—Goodrich.

*Circle 375 on Reader Service Card*

**WELDER POWER PLANT** — Information is available on the AD-225-L gasoline driven ac or dc power plant for welders.—Miller Electric.

*Circle 376 on Reader Service Card*

**STEEL FORMS**—A new catalog covers Efco steel forms and accessories, and includes many examples of job applications.—Economy.

*Circle 377 on Reader Service Card*

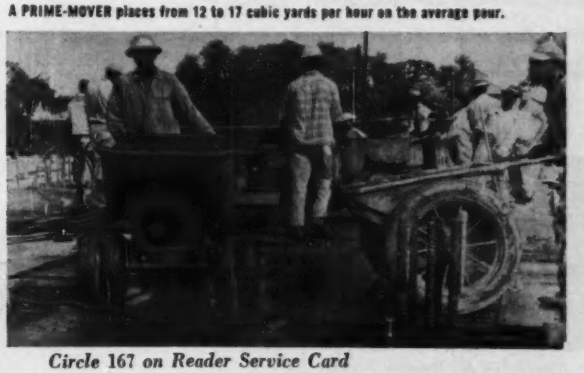

STARTED WITH 1 PRIME-MOVER

NOW OWNS 23 PRIME-MOVERS

FROMMEYER & CO.

PHILADELPHIA provides its laborers with the power to produce. PRIME-MOVER is made specifically for laborers' use — to triple their output in handling of materials. Here is an immediate and positive way to cut costs. Why not do as this alert contractor is doing? Give *your* laborers the power to produce. Write for job estimating data and performance reports.

A PRIME-MOVER places from 12 to 17 cubic yards per hour on the average pour.



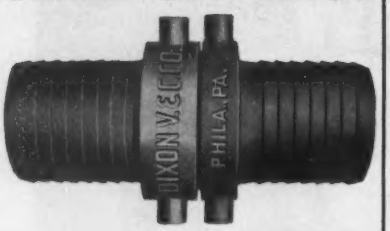
THE PRIME-MOVER CO.
PRIME-MOVER
MUSCATINE, IOWA

*Circle 167 on Reader Service Card*

*Most Reliable Connections . . . for Your Suction and Water Hose*

"KING"

SHANK COUPLINGS




Strong, durable couplings with a reputation for long, reliable service among Contractors and other users of suction and water hose. Although built to take severest on-the-job punishment, they have refinements which contribute to outstanding efficiency and ease of handling . . . absolute uniformity in quality, threading and dimensions . . . well defined, smoothly finished corrugations.

Made in regular and heavy patterns, in all-malleable iron, plain or plated; all-brass; and malleable iron, plain or plated, with brass swivel nut. Sizes range from 1" to 8", inclusive.

***Stocked by Manufacturers and Distributors of Industrial Rubber Products***

**DIXON**
*Valve & Coupling Co.*
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.
BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON
DIXON VALVE & COUPLING CO., LTD., TORONTO, Associate Companies
Buck Iron Company, Inc., Quarryville, Pa. · Precision Drawn Steel Company, Camden, N.J.

*Circle* 168 *on Reader Service Card*


## AD LITERATURE

***Listed below is free material offered in this issue's advertisements received up to Oct. 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside back cover.***

**HYDRAULIC JACKS** — Bulletin 331 tells how two 200-ton hydraulic jacks pushed three 96-in.-dia sewer pipes 88 ft.—Rodgers Hydrauic.

*Circle* 378 *on Reader Service Card*

**IRON CASTINGS** — A 168-p catalog provides data on gray and ductile iron castings, such as drain and manhole covers.—Neenah Foundry.

*Circle* 379 *on Reader Service Card*

**PORTABLE HEATER** — Details are available on Electro-Jet portable oil heater capable of delivering up to 400,000 Btu.—Electronics, Inc.

*Circle* 380 *on Reader Service Card*

**SLAB FORMS**—The V form, a slab-forming system with three basic, quickly assembled parts, is described in a booket.—Acrow.

*Circle* 381 *on Reader Service Card*

**FRICTION CONTROL** — Technical Bulletin 109 lists styles and types of friction materials that cut maintenance costs.—Johns-Manville.

*Circle* 382 *on Reader Service Card*

**FLASH SIGNALS**—Catalog 55 shows the complete Dietz Visi-flash line, which includes the new No. 695 with 5-in.-dia lens.—R. E. Dietz.

*Circle* 383 *on Reader Service Card*

**MOBILE DRILL** — A 4-p brochure gives full details of the high-speed Apache mobile drill designed for truck or tractor mounting.—Mobile.

*Circle* 384 *on Reader Service Card*

**AIR HOSE** — Bulletins M610 and M694 decribe the Homoflex air hose that coils and uncoils without kinking.—Raybestos-Manhattan.

*Circle* 385 *on Reader Service Card*

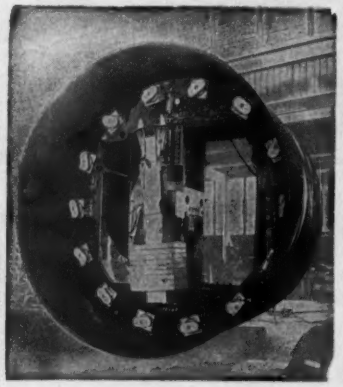
**SHOVELS**—Case History Report 130 gives data on the use of Magnetorque P&H shovels on a big earth-moving job.—Harnischfeger.

*Circle* 386 *on Reader Service Card*

**STEEL CORD TIRES** — Booklet provides data and user field experience on truck and equipment tires fortified with steel cord.—Bekaert.

*Circle* 387 *on Reader Service Card*


**MAYO** SANDHOG EQUIPMENT



Design and construction of Mayo Shields and other Sandhog Equipment are backed by over 25 years of job-tested experience throughout the world.

FREE BULLETIN No. 23-a shows installation of Mayo shields, cylindrical air locks, lock doors, medical locks and tunnel cars. Send for your free copy today.

SPECIAL EQUIPMENT DEVELOPED FOR SPECIAL PROBLEMS

MAYO
TUNNEL AND MINE EQUIPMENT
LANCASTER, PENNA.

*Circle* 211 *on Reader Service Card*

**WANT MORE INFO?**

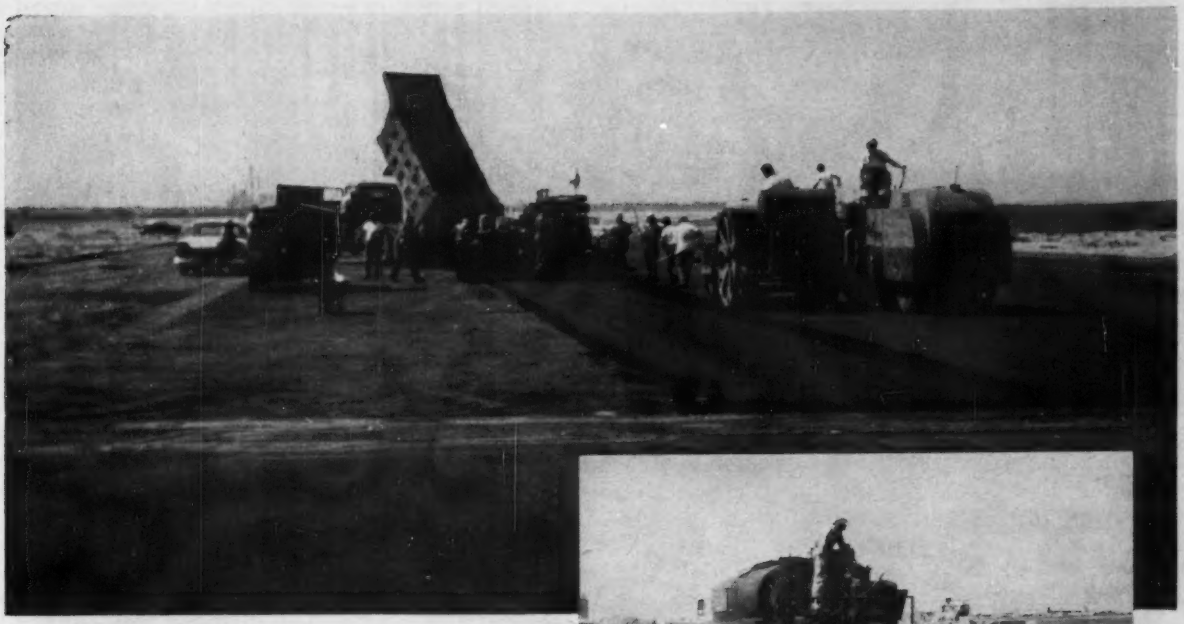
**on the products described and advertised in CONSTRUCTION METHODS and Equipment . . . . .**

plus articles and other editorial reprints on subjects of interest and value to you.

**TURN TO THE NEW READER SERVICE CARD**

**on the last page in this and all subsequent issues of CONSTRUCTION METHODS AND EQUIPMENT.**

*Construction Methods* AND EQUIPMENT
A McGRAW HILL PUBLICATION
330 West 42nd Street, N.Y. 36



Two courses of hot-mix Texaco Asphaltic Concrete, each two inches thick, were laid on the Asphalt Macadam foundation.

Applying Texaco Asphalt during construction of eight inch Asphalt Penetration Macadam foundation on taxiway at New York International Airport.

**Asphalt Contractor:**
**Metropolitan Asphalt Corporation**

# Heavy-duty Asphalt insures long service with low upkeep for New York International Airport taxiways

Taxiways used by the huge jet airliners constantly arriving and taking off at New York International Airport require a heavy-duty pavement. When six new taxiways were completed by The Port of New York Authority last year, Texaco Asphalt was used in the construction of both the foundation and the wearing surface. The result is a durable, resilient pavement, which will absorb heavy traffic year after year with a minimum of maintenance.

Each taxiway is 75 feet wide, with a 25 foot shoulder at each side. The taxiway itself has an 8-inch foundation of Texaco Asphalt Macadam, consisting of two 4-inch courses of crushed stone, each of which received an application of Texaco Asphalt Cement to fill the voids between the stone and form a highly durable, waterproof base. Over this was constructed a hot-mix Texaco Asphaltic Concrete wearing surface laid in two courses, each two inches thick. Shoulders were surfaced with a single two inch course of Texaco Asphaltic Concrete.

The type of asphalt construction used on these taxiways at New York International Airport is also ideally suited to heavily traveled highways and streets, particularly Interstate Highways. In addition to its rugged durability and low upkeep cost, this pavement has a substantially lower initial cost than rigid paving designed for the same traffic load. It is speedily laid because it requires no time-consuming curing period. Thanks to its resilience and its freedom from expansion joints, it has a velvet-smooth riding quality, which appeals strongly to motorists.

Whatever your own paving problem, there is a heavy-duty, intermediate or low-cost type of Texaco Asphalt construction exactly suited to your needs. If you would like help with such a problem, our 55 years of asphalt experience is at your service. Ask our nearest office to have one of our field representatives call on you.

**TEXACO INC., Asphalt Sales Div., 135 E. 42nd Street, New York 17**
Chestnut Hill 67, Mass. • Chicago 4 • Denver 1 • Houston 1 • Jacksonville 1
Minneapolis 3 • Philadelphia 2 • Richmond 25

TEXACO

**TEXACO ASPHALT**

# What do you want to cut besides costs?

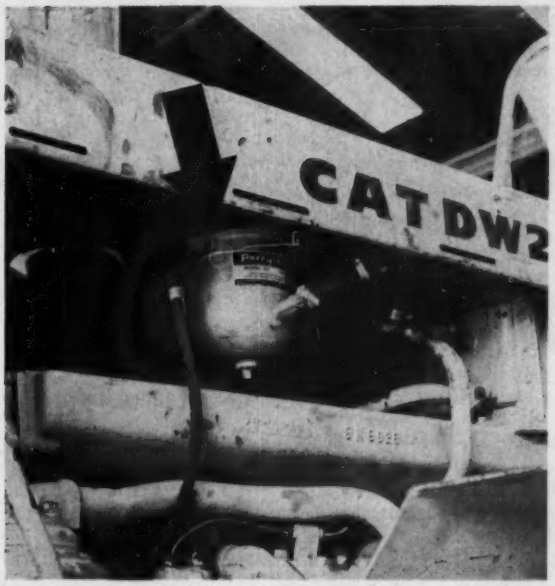
Name your problem. Are you clearing land... cutting lightweight beams... leveling piling? If it's a wood-cutting job, there's a **McCulloch Chain Saw** to handle it fast! McCulloch saws start easily in any weather, cut at full power overhead or sideways. For safety, automatic clutch stops chain when idling. Operating costs are low. McCulloch's exclusive New Super Pintail® Chain stays sharper, lasts longer than any other make. Rugged McCullochs have been the choice of professional loggers for years. It's an ideal **portable power tool,** too. Attachments are available for drilling earth or rock, boring heavy timber, cutting brush or wildgrass. The world's **Number One** saw in sales, quality, dependability and dealer network service. Seven professional models starting at **$149.95** with full 16″ bar. A card to McCulloch Corporation, 6101 W. Century Blvd., Dept. CM-2. Los Angeles 45, Calif., will bring full information.

■ McCulloch Corporation, Los Angeles ■ Marine Products Division (Scott Outboards), Minneapolis
■ McCulloch of Canada, Ltd., Toronto ■ McCulloch International Inc., Los Angeles

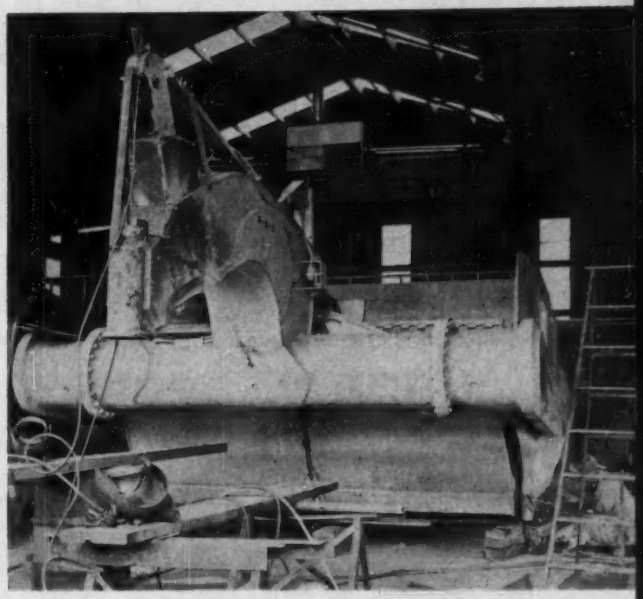
**LEADERSHIP THROUGH CREATIVE ENGINEERING**

5-0684

*Circle 170 on Reader Service Card*




**WATER CLEANER**—Filter with chemically treated element cleans cooling system on Cat engine.



**BIG SCRAPER**—Replogle's mechanics widened and lengthened a No. 456 Cat scraper. Original struck capacity was 19.5 yd, now it is 37 yd.

# Shop Handles Servicing, Modifications, and Rebuilding

NO MECHANICAL REPAIRS are too hard, and no maintenance problem is too small for the shops and service facilities at the C. F. Replogle Co. of Circleville, Ohio. Apart from handling regularly scheduled preventive maintenance, the shops can repair or rebuild practically any construction machine.

Replogle's equipment people are on the lookout constantly for ways to reduce maintenance yet increase the time interval between major overhauls or parts replacements. They've modified engine cooling systems, changed the design of torque converters, increased the capacity of scrapers, assembled huge portable electric plants, and rebuilt dozens of trucks.

### *Better Cooling Systems*

Changing the water and adding antifreeze will keep an engine cooling system going for quite a while, but the insides of both the radiator and the engine will deteriorate. Air and impurities in the water are the cause, and Replogle has gone a long way toward eliminating it.

Here's how they do it. To get rid of the impurities, they install filters. And to keep a check on the air, they add sight glasses near the discharge side of the water pump. The sight glasses are pieces of transparent tubing that form a part of the water lines.

A look at the sight glass while the engine is running tells the operator or maintenance man whether air is present in the system. Presence of air causes excessive pitting and cavitation in the cylinder block. Some of the water passages between cylinders are rather small. If an air bubble passes through such a space, the sides of the passage become very hot, and water following the air bubble turns into steam upon coming in contact with the hot metal. Many repetitions of this will pit the metal and wear it out.

And air bubbles in other parts of the system such as water lines and pump, cause cavitation. This deteriorates the metal rapidly, necessitating frequent replacement of parts.

When air bubbles are detected in the sight glass, it's a simple matter to add water to fill the system. If the bubbles persist, the mechanics look for cooling system leaks and repair them.

Filtering out impurities is the other step in improving cooling system performance. To do this, Replogle has installed cooling system filters on all major equipment. The filters are manufactured by the Perry Filter Div., of R. M. Hollingshead Corp.

*continued on next page*

The Perry filters contain a chemically activated replacement element and work much the same as do bypass oil filters. Dirty water from the discharge side of the pump enters the bottom of the filter assembly and is cleaned as it passes through the unit. From the top of the filter the water enters the return line from the engine to the radiator.

Servicing is easy. The filter element is replaced every 300 to 500 hr on Caterpillar, LeTourneau-Westinghouse, M-R-S, and similar machines. On Autocar trucks, the service interval ranges between 5,000 and 10,000 mi, depending on the operating conditions.

### *Improved Torque Converters*

Here's where Replogle's equipment people turned into mechanical engineers and redesigned a part of the torque converter drive on some of the older Cat D9's. The part they worked on is a bearing race and sprag unit. This unit comes into play whenever the tractor has to be pushed to start the engine. The sprag unit locks out the action of the torque converter, enabling the engine to start at a slow pushing speed. Without the sprag unit, the tractor would have to be pushed at a higher speed—like a car with automatic transmission.

But it was this same sprag unit that caused Replogle a lot of trouble. The bearing race adjacent to it just wouldn't hold up under punishment. So, they took it out and put in a different bearing.

They machined the bearing race to make room for a 1315 Hyatt bearing. Part of the drive shaft had to be machined down, too, to fit the new bearing. Finally, a groove was cut in the bearing race to provide room for two snap rings that hold the Hyatt bearing in place.

Now the torque converters work fine. The only trouble is that to start the tractor by pushing, a higher speed is necessary. But this is a small problem. Replogle's modification was called to the attention of Caterpillar engineers, and the torque converter design has been modified by them to eliminate the bearing trouble.

### *Bigger Scrapers*

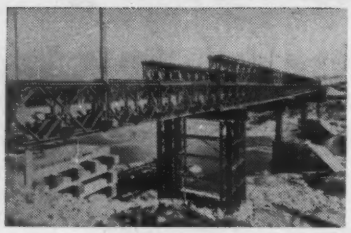
Replogle likes to have big machines. To get them, he sometimes has to enlarge a standard model in his own shop. For one such conversion, the mechanics started with a Cat No. 456 scraper rated at 19.5 yd struck capacity. It was lengthened by 36 in. and widened by 12 in., and side boards were added. To make it fit prime movers, the hitch had to be lengthened. All this required bigger tires, and Replogle substituted 33.5x33 tires for the original 24x29. To make the new wheels fit, the rear end was rebuilt, too. Now the scraper can haul a 37-yd struck or 45-yd heaped load.

### *Portable Electric Plants*

Big capacity was the prime objective in the construction of a pair of portable electric plants. One of the units is rated at 500 kw, the other at 750 kw. Both are designed to power electrically operated batch plants, or crushing


**YOU CAN DO IT FASTER . . .**

**with Bailey Bridging . . .**



For emergency, access, permanent or suspension type bridging. These versatile units also used for buildings, forms, trestles, falsework. Bridge shown here is over Smooth Rock Falls, Ontario, Canada, one of five Baileys used by Ontario Department of Highways in this area.

**. . . and Uniflote Ferries . . .**

Combined floating Uniflote sections provide transport across water for loads up to 100 tons! Other uses: floating platforms for derricks, cranes, piledrivers. Landing stages, wharves, piers, etc. Uniflote Ferry in photograph carried 30-ton equipment load across Harbour in Toronto, Canada.

**CONTRACTORS SERVICE LIMITED**

SOLE DISTRIBUTORS IN CANADA AND U.S.A.
World Licensees Thos. Storey (Engineers) Ltd., Stockport & London, England

38 COMMERCIAL ROAD — TELEPHONE HU. 5-4424 — TORONTO 17, CANADA

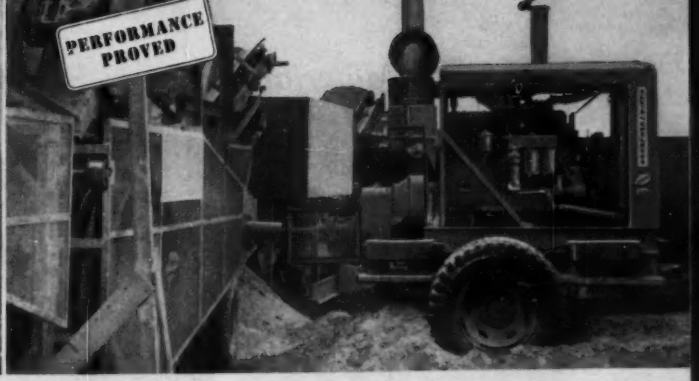
REPRESENTATIVES

Timberland Machines Inc.
25 Park Street,
Lancaster, New Hampshire

Mason and Bates Inc.
McClure Building
Frankfort, Kentucky

*Circle 172 on Reader Service Card*

**EXCAVATOR-CRANES** — The 21000 gives Koehring's Model 1205 the kind of dependable power needed for demanding shovel-crane service.




**CRUSHERS** — Quick recovery power is provided by this turbocharged 21000 diesel driving a Cedar Rapids secondary crusher.

**OFF-HIGHWAY TRUCKS** — Repowered with a 21000, this truck now works faster — hauls an extra 50 tons an hour — and uses no more fuel to do it.

**ELECTRIC SETS** — The quick-response 16000 and 21000 diesels — drive brushless generators which offer many electrical and mechanical operating advantages.

◀ **AIR COMPRESSORS** — The 16000 diesel brings to Davey compressors the advantages of economy, dependability, ease of servicing, and high power availability.

# A-C diesels prove themselves in all types of equipment

**16000** 230 HP

**21000** (turbocharged) 340 HP

The amazing Allis-Chalmers 16000 and 21000 diesels are exceeding expectations wherever they are used.

**Lowest fuel consumption — by far** — The turbocharged 21000 uses as low as .355 lb of fuel per hp-hr — 8 to 27 percent less than any other engine in the field — by published claims! The saving is 1 to 2½ gal. in every 10. Buying fuel, hauling it or storing it, that represents important money.

**Stamina to match** — These diesels were actually operated at full load with half the rod and main bearings cut away . . . deliberately run hot and with only partial lubrication . . . operated with imbalances and intentionally weakened parts. Their stamina was tested far beyond toughest actual use. Reports from hundreds of engines in the field confirm the difference between these great diesels and others.

**Power is THERE** — at full throttle and at continuous rating. Torque is consistently high — to make any equipment perform at its best.

**Superior starting** — starts quickly and gets on the job — even at sub-freezing temperatures — without the use of starting aids.

Let us tell you more about these *modern* diesels with their cleaner, tougher, more serviceable design. Allis-Chalmers, Milwaukee 1, Wisconsin.

BE20-C

**ALLIS-CHALMERS** A-C

*J-M Friction Material Technical Bulletin #109:*

# How to select the right friction material for the right spot to cut maintenance costs

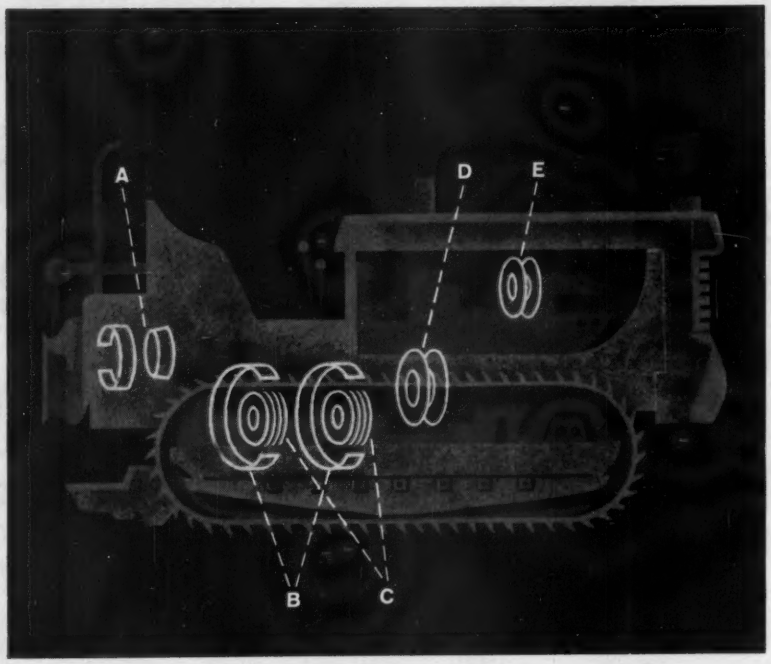
Over 50% of all premature failures in relined brakes and clutches are caused by the improper selection of friction material for the machine's requirements.

Working closely with machine operators, J-M Friction Engineers have developed a wealth of knowledge and data, which can help you extend the period between overhauls and at the same time step up the power and efficiency of your equipment.

Here is a diagrammatic sketch of latest recommendations on the selection of friction materials for a typical crawler tractor . . . this information is based on the wide, practical experience of countless operators.

Johns-Manville Friction Materials, factory equipment on many machines, offer the most complete range of styles in the field. They can fulfill the friction material needs of any piece of equipment in any service. J-M Moulded Asbestos Frictions, particularly well-suited where heavy shock loads tend to crush or shear materials, give long life in hardest use. For those who prefer woven frictions, J-M Woven Asbestos Roll stock, in a variety of styles, seats quickly, will not score, and has great mechanical strength.

Woven J-M Cone Facing being applied to a power take-off unit.




## Easy guide to proper friction selection:

**A. Power Take-Off** receives sudden shock loads, intermittent loading.

—Cone clutch—Style 510 for easy seating. Style 304 for those operating in oil.

—Brake Lining—Style 240 for good wear and friction stability.

**B. Steering Brakes** subject to erratic engagement and extreme wear.

—Style 240 for light-duty tractors . . . Style 140 for heavy-duty tractors for high quality and excellent wear characteristics.

**C. Steering Clutch Discs** exposed to high energy loading with shock, slippage and heat.

—Style 140 straight clutch facing . . . Style 141 Gear Tooth Facing, for their resistance to shock, heat dissipation, low-fade characteristics and Style 141's high tooth impact strength.

**D. Master or Engine Clutch** exposed to constant high energy loading.

—Style 751 for light-duty tractors for good wear and engagement characteristics and Style 140 for heavy-duty tractors.

**E. Starting Engine Clutch** needs positive, non-slip, non-grabbing friction.

—Style 751 because of excellent cushioning action and engagement characteristics.

The assistance of a friction materials specialist to help you select your requirements is available through your Johns-Manville Distributor. Your own copy of the J-M Industrial Friction Materials book, listing all friction materials' types, styles and recommendations can be had by writing Johns-Manville, Box 14, New York 16, N. Y. In Canada: Port Credit, Ontario. Ask for FM-35A.

**JOHNS-MANVILLE**

JOHNS-MANVILLE JM PRODUCTS

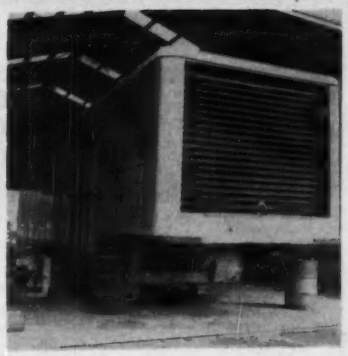
◀ *Circle 173 on Reader Service Card*

*Circle 174 on Reader Service Card*

and aggregate producing installations.

Both plants are mounted on Replogle-built trailers with fifth-wheel hitches. The trailers are fully enclosed and equipped with filters set in the walls to purify the incoming air. A 12-cyl GM Electro-Motive diesel engine powers the 750-kw plant. To get enough cooling capacity for the big engine, two radiators were installed—one on either side of the trailer. Each of the radiators is equipped with a fan driven by a separate electric motor running on the plant's own current.

Incidentally, Replogle has found that he needs only one of the plants, and he's willing to sell one—it doesn't matter which.



**ELECTRIC PLANT**—Shop-built trailer carries 750-kw plant. Opening in front supplies filtered air to trailer; openings in each side of trailer supply air to two radiators.

**REBUILT HITCH**—Instead of replacing a $500 hitch, Replogle's shop cuts out old sleeve and welds new one in place for $125.

### *Rebuilt Hitches*

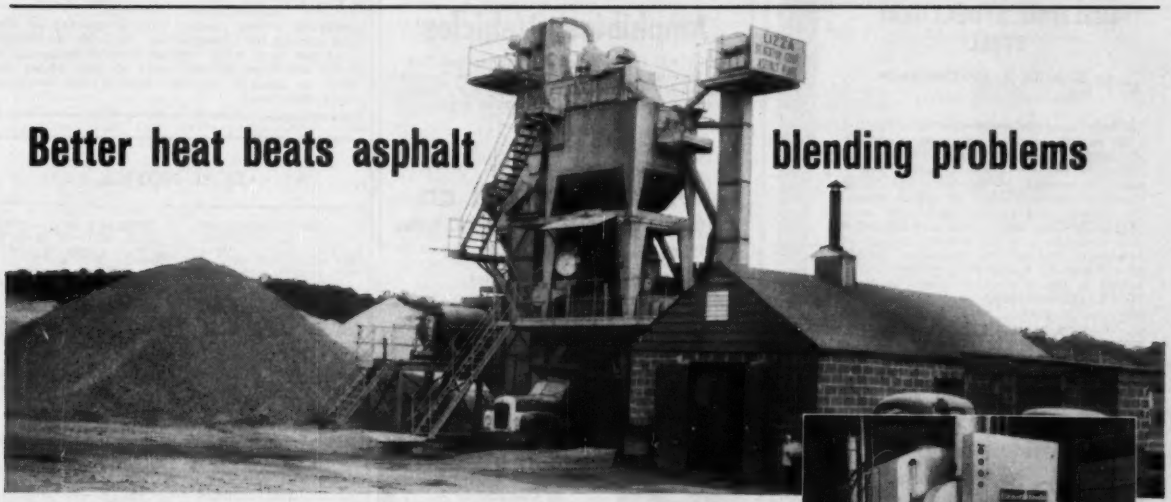
An item that needs comparatively frequent replacement is the hitch on the DW20. A new hitch costs just over $500, and Replogle would rather repair than buy one.

To rebuild a hitch, the mechanics cut out and discard the original sleeve and weld a new one in place. Then they add a new tapered bushing to complete the job. The whole repair costs only $100 to $125.

Another favorite piece of equipment for rebuilding is the surplus Army truck. Replogle has standardized on these 6x6's, most of them with automatic transmissions, that he buys in various stages of disrepair. His men do a good job of putting the trucks into operating shape, but sometimes it takes several trucks to make one good one. Some of the trucks are used for general hauling, others carry specialized equipment such as lube rigs, service tools, or water tanks.

These maintenance, repair, and conversion operations are handled by a C. F. Replogle Co. subsidiary, the Replogle Equipment Co., whose manager is Jim Poston. Dean Shellhous is general maintenance superintendent. The preventive maintenance superintendent is J. H. Maxwell. Robert Johnson is purchasing agent, and Jack Tubbs is shop maintenance manager. Virgil Schrader is shop foreman.


# Better heat beats asphalt blending problems



Lizza Asphalt Construction Company, Oyster Bay, Long Island, cuts maintenance costs, gets top performance blending asphalt into black-top paving materials with Cleaver-Brooks Peak-Temp oil heater.

Heating 10,000 gallons of asphalt a day has been a lot easier for J. W. Slawson, superintendent of Lizza Asphalt Construction Company, since the installation of a Peak-Temp oil heater, Model CPT 500-12, in March, 1958.

"We don't have to worry about overtime costs," says Mr. Slawson. "The fully automatic operation of this heater, plus low-pressure operation, keeps manpower requirements down. Maintenance is low, and our records show operation is efficient. The unit has run continuously (more than two years) without appreciable trouble."

For safe, low-pressure operation and continuous, automatic heating to 480F, Peak-Temp has proved itself to be the economical solution to construction material and process heating problems. For details, write Cleaver-Brooks, Dept. M, 399 E. Keefe Ave., Milwaukee 12, Wisconsin.

*Circle 175 on Reader Service Card*

Cleaver Brooks®

ORIGINATOR AND LARGEST PRODUCER OF PACKAGED BOILERS

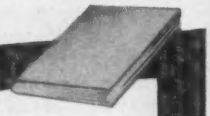
Just Out — 3rd Edition

## CONSTRUCTION ESTIMATES AND COSTS

**By H. E. PULVER**
*Consulting Engineer*

You can make sounder, more accurate construction estimates with the tested methods brought to you in this practical book. It covers every detail of the estimator's job—describes step-by-step how to best compute material, labor, equipment, and overhead costs, plus the necessary profit. Covered are all kinds of light and heavy construction work, including excavating, piling, and bracing—using concrete, masonry, wood, and structural steel in various ways—roofing and flashing, lathing and plastering, heating, air-conditioning, plumbing, electrical work, and others. This revised edition provides fresh material on asphalt walks, driveways, and pavements — plus modern data on wages, materials, and prices. In addition, it presents a new method for computing equipment ownership and operating costs, and contains many complete illustrative estimates.

Arithmetical methods for accurately estimating costs are fully described and illustrated. 3rd Ed., 640 pp., 126 illus., $12.00



Just Out

## ERECTING STRUCTURAL STEEL

**By SAMUEL P. OPPENHEIMER**
*Professional Engineer*

To help you effectively plan and erect a wide variety of steel structures a wealth of methods and working information is presented in this book. It gives you a sound knowledge of the many factors of structural erecting such as types, names, descriptions, and uses of equipment; tools and scaffolding; tested work methods; erection methods; and the business aspects of estimating, selling, and managing. Included are facts on equipment and methods involved in the erection of tower structures by Chicago and basket booms, and those involved in erection by automotive, crawler, and slewing cranes. The book also explains how to solve problems requiring stresses developed in supports, fastenings, parts and riggings, and shows how to analyze structural, reinforcing, and miscellaneous iron plans. 272 pp., 111 illus., $9.50

**FREE EXAMINATION**

McGraw-Hill Book Co., Dept. CM-11
327 W. 41st St., New York 36, N. Y.

Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep plus few cents for delivery costs, and return unwanted book(s) postpaid. (We pay delivery costs if you remit with this coupon—same return privilege.)

☐ Pulver—**Construction Estimates and Costs**—$12.00
☐ Oppenheimer—**Erecting Structural Steel**—$9.50

Name .....
Address .....
City ..... Zone..... State.....
Company .....
Position .....

**For price and terms outside U.S. Write McGraw-Hill Intl., N.Y.C. 36** CM-11

*Circle 176 on Reader Service Card*


# SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** EQUIPMENT USED OR RESALE

**DISPLAYED ——RATES—— UNDISPLAYED**

**The advertising rate** is $21.75 per inch for Equipment & Business Opportunity advertising appearing on other than a contract basis. Contract rates quoted on request.
**Employment Opportunities**—$29.33 per inch, subject to Agency commission.
**An advertising inch** is measured ⅞" vertically on one column. 3 columns—30 inches—to a page.

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line. Discount of 10% if full payment is made in advance for 4 consecutive insertions.

**Positions Wanted** undisplayed advertising rate is one-half of above rate payable in advance.
**Box Numbers**—count as one line.

**Send New Advertisements and Inquiries to Classified Adv. Div. CONSTRUCTION METHODS & EQUIPMENT, P. O. Box 12, N. Y. 36, N. Y.**


## RUBBER PRODUCTS for IMMEDIATE DELIVERY

CALL, WIRE or WRITE
CARLYLE
THE
RUBBER HEADQUARTERS

**LOW PRICES,
DEPENDABLE QUALITY
FOR 40 YEARS**

**WHAT EVER YOUR RUBBER NEEDS ARE!!**

| | |
|---|---|
| AIR HOSE | OIL HOSE |
| WATER HOSE | WELDING HOSE |
| SUCTION HOSE | VACUUM HOSE |
| DISCHARGE HOSE | SAND SUCTION HOSE |
| STEAM HOSE | |
| PILE DRIVE HOSE | DREDGE SLEEVES |
| HYDRAULIC HOSE | CONVEYOR BELTING |

ELEVATOR BELTING
"V" BELTS

*Write for complete catalogue*

**CARLYLE RUBBER CO., INC.**
103-107 WARREN ST Digby 9-3810 NEW YORK, N. Y.

*Circle 223 on Reader Service Card*

## Amphibious Vehicles

**MK4 (LVT) (4) Designed For Hauling and Towing Supplies and Equipment Over Rough Terrain and Water. Unused. Like new. 250 H.P. Continental 7 Cylinder Radial Air Cooled Engine.**

**$1,795**
**(Original Cost $42,800)**

**PORT TOLEDO STEEL CO.**
**310 Sylvania Ave., Toledo 12, Ohio**
**Phone: GReenwood 9-5357**
*Send For Descriptive Brochure*

*Circle 224 on Reader Service Card*

*Circle 225 on Reader Service Card*

***Your Inquiries to Advertisers Will Have Special Value . . .***

—for you—the advertiser—and the publisher, if you mention this publication. Advertisers value highly this evidence of the publication you read. Satisfied advertisers enable the publishers to secure more advertisers and—more advertisers mean more information on more products or better service—more value—to YOU.


### • WANTED

**Anything within reason that is wanted in the field served by Construction Methods & Equipment can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.**

### LEGAL NOTICE

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, JULY 2, 1946 AND JUNE 11, 1960 (74 STAT. 208) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF

Construction Methods and Equipment published Monthly at New York, New York for October 1, 1960.

1. The names and addresses of the publisher and editor are: Published by McGraw-Hill Publishing Company, Inc., 330 West 42nd St., New York 36, N. Y.; Editor, Henry T Perez, 330 West 42nd St., New York 36, N. Y. Managing editor: None; Business manager: None.

2. The owner is McGraw-Hill Publishing Company, Inc., 330 West 42nd St., New York 36, N. Y. Stockholders holding 1% or more of stock are: Donald C. McGraw & Willard T. Chevalier, Trustees under Indenture of Trust m/b James H. McGraw, dated 1/14/21 as modified; Donald C. McGraw & Harold W. McGraw, Trustees under an Indenture of Trust m/b James H. McGraw, dated 7/1/37 as amended; Donald C. McGraw, individually; Estate of Mildred W. McGraw, Donald C. McGraw and Catharine McGraw Rock, Executors; (all of 330 West 42nd Street, New York 36, N. Y.); Grace W. Mehren, 530 Arenas St., LaJolla, Calif.; Affiliated Fund, Inc., 63 Wall St., New York, N. Y.; Genoy & Co., P. O. Box 491, Church St. Station, New York, N. Y.; Touchstone & Co., c/o Wellington Fund, Inc., Claymont, Delaware.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: 48,799.

McGRAW-HILL PUBLISHING COMPANY, INC.
By JOHN J. COOKE, Secretary

Sworn to and subscribed before me this 15th day of September, 1960.

[SEAL] JANET A. HARTWICK
(My commission expires March 30, 1961)

# Advertisers in this month's

# Construction Methods AND EQUIPMENT

McGRAW - HILL

330 WEST 42nd STREET, NEW YORK 36 LOngacre 4-3000

Number of copies of this issue printed 52,540

A

ACROW Corp. of America ..... 156
Air Reduction Sales Co., Div. Air Reduction Co., Inc. ..... 159
Albertson & Co., Inc. ..... 145, 146
Allis-Chalmers ..... 50-51, 173
Allison Div., General Motors Corp. ..... 73
American Chain & Cable Co., Inc. (Automotive & Aircraft Div.) ..... 28 (Wright Hoist Div.) ..... 159
American Hoist & Derrick Co. ..... 90
American Manganese Steel Div., American Brake Shoe Co. ..... 26-27
American Steel & Wire Div., United States Steel Corp. .. 69, 70-71, 72
Austin-Western Works, Construction Equip. Div., Baldwin-Lima Hamilton Corp. ..... 150

B

Bekaert Steel Wire Corp. ..... 119
Bethlehem Steel Co. ..33, 34-35, 36, 112, 161
Black & Decker Mfg. Co., The ..... 20-21
Butler Bin Co. ..... 49

C

Caterpillar Tractor Co. ..... 14-15, 41
Champion Spark Plug Co. ..... 98-99
Chevrolet Div., General Motors Corp. ..... 105, 106-107, 108-109
Chicago Pneumatic Tool Co. ..... 47, 128-129
Cities Service Oil Co. ..... 42-43
Clark Equipment Co. (Construction Machinery Div.) ..... 74-75, 76-77
Cleaver Brooks Co. (Heater Div.) ..... 175
Cleveland Trencher Co., The ..... 102
Clevite Service Div., Clevite Corp. ..... 38
Continental Motors Corp. ..... 165
Contractors Service Ltd. ..... 172
Cotta Transmission Company ..... 46
Curtiss-Wright Corp. (Marquette Div.) ..... 52

D

Detecto Scales, Inc. ..... 159
Delco Remy Div., General Motors Corp. ..... 22-23
Diamond Chain Co. ..... 13
Dietz Co., R. E. ..... 160
Dixon Valve & Coupling Co. ..... 168
Donaldson Co., Inc. ..... 155

E

Economy Forms Corp. ..... 162
Electronics, Inc. ..... 97
Euclid Div., General Motors Corp. 30-31, 158

F

Food Machinery & Chemical Corp. ..... 164
Ford Motor Co. (Industrial Engine Div.) ..... 130
Fuller Manufacturing Co. ..... 132-133

G

Galion Iron Works & Mfg. Co. ..... 116
Gardner-Denver Company ..... 64-65
General Electric Co., (Lamp Div.) ..... 60
Goodrich Aviation Products Co., The B. F. Div., The B. F. Goodrich Co. ..... 1
Gorman-Rupp Co., The ..... 5
Gray Company Inc., The ..... 165

H

Harnischfeger Corp. ..... 58-59
Heller & Co., Walter E. ..... 32
Hetherington & Berner, Inc. ..... 126
Homelite Div., Textron Inc. ..... 48-49
Hough Co., The Frank G. ..... 131

I

International Harvester Co. (Construction Equipment Div.) ..... 66-67 (Industrial Tractors) ..... 53
Iowa Manufacturing Co. ..... 24-25

J

Jaeger Machine Co. ..... 138
Johns-Manville (Packing & Friction Materials Div.) ..... 174

K

Kohler Co. ..... 10

L

Lehigh Portland Cement Co. ..... 6
LeRoi Div., Westinghouse Air Brake Co. ..... 123
Liberty Mutual Insurance Co. ..... 56
Lima Works, Construction Equipment Div., Baldwin-Lima-Hamilton Corp. ..... 149, 151
Lipe-Rollway Corp. ..... 139
Lister-Blackstone Inc. ..... 138

M

Mack Trucks, Inc. ..... 141, 142-143, 144
Manitowoc Engineering Corp. ..... 37
Marion Power Shovel Co. ..... 115
Marquette Manufacturing Co., Inc. ..... 104
Master Builders Co. ..... 2nd Cover
Mayo Tunnel & Mine Equipment ..... 168
McCulloch Corporation ..... 170
McGraw-Hill Book Co., Inc. ..... 176
Miller Electric Mfg. Co., Inc. ..... 160
Mobile Drilling, Inc. ..... 154
Mortrench Corporation ..... 3rd Cover

N

Neenah Foundry Co. ..... 162
Northwest Engineering Co. ..... 7

O

Onan & Sons, Inc., D. W. ..... 18-19

P

Patent Scaffolding Co., Inc. ..... 96
Phillips Manufacturing Co. ..... 100-101
Porter Co., Inc., H. K., (Thermoid Div.) 78
Prime Mover Co., The ..... 167

R

Raybestos-Manhattan, Inc. (Manhattan Rubber Div.) ..... 54-55
Richmond Screw Anchor Co., Inc. ..... 147
Rockwell-Standard Corp. (Transmission & Axle Div.) ..... 63 (Universal Joint Div.) ..... 89
Rodgers Hydraulic, Inc. ..... 163
Rome Plow Co. ..... 45

S

Signode Steel Strapping Co. ..... 157
Simplex Industrial Forms, Inc. ..... 153
Sinclair Refining Co. ..... 125
SKF Industries, Inc. ..... 134-135
Standard Oil Co. (California) ..... 29
Standard Oil Co. (Indiana) ..... 92-93
Superior Concrete Accessories, Inc. ..... 166
Symons Clamp & Mfg. Co. ..... 2

T

Texaco Inc. ..... 16-17, 169
Thew Shovel Co. ..... 3
Timken Roller Bearing Co. ..... 4th Cover

U

Union Fork & Hoe Co. ..... 97
Unit Crane & Shovel Corp. ..... 44
United States Steel Corp. ..69, 70-71, 72, 152

W

Wincharger Corporation ..... 156
Wisconsin Motor Corp. ..... 148
Worthington Corp. ..... 8-9, 28
Wright Hoist Div., American Chain & Cable Co., Inc. ..... 159

■

CLASSIFIED ADVERTISING

F. J. Eberle, Business Manager

Equipment (Used or Surplus New) For Sale ..... 176

Notices Legal ..... 176

## SALES REPRESENTATIVES

**NEW YORK** — **L. S. KELLY**
OXford 5-5959
500 Fifth Ave., New York 2, N. Y.

**PHILA.** — **H. THOMAS McCARREN**
LOcust 8-4330
Six Penn Center Plaza, Phila. 3, Pa.

**ATLANTA** — **M. H. MILLER**
TRinity 5-0523
1375 Peachtree St., N.E., Atlanta 9, Ga.

**CLEVELAND** — **W. E. DONNELL**
SUperior 1-7000
55 Public Square, Cleve. 13, Ohio

**CHICAGO** — **EDWARD L. WILANDER**
MOhawk 4-5800 — **MELVIN B. NYLUND**
**GEORGE K. SMITH**
520 N. Michigan Ave., Chicago 11, Ill.

**DALLAS** — **GORDON JONES**
RIverside 2-8802 — **JAMES R. PIERCE**
**JOHN GRANT**
1712, The Vaughn Blvd., Commerce St., Dallas 1, Texas

**DENVER** — **JOHN W. PATTEN**
ALpine 5-2981
Tower Blvd., 1700 Broadway, Denver 2, Colo.

**DETROIT** — **J. L. RICE**
WOodward 2-1793
856 Penobscot Bldg., Detroit 26, Mich.

**LOS ANGELES** — **S. S. TIEBOUT**
HUntley 2-5450
1125 West Sixth St., Los Angeles 17, Calif.

**HOUSTON** — **GENE HOLLAND**
JAckson 6-1281
Prudential Bldg., Rm. W-724, Halcombe Blvd., Houston 25, Texas

**PORTLAND** — **SCOTT HUBBARD**
CApital 3-5118
Room 445, Pacific Bldg., Portland 4, Ore.

**SAN FRANCISCO** — **J. W. OTTERSON**
DOuglas 2-4600 — **ROBERT T. KOCH**
68 Post St., San Francisco 4, Calif.

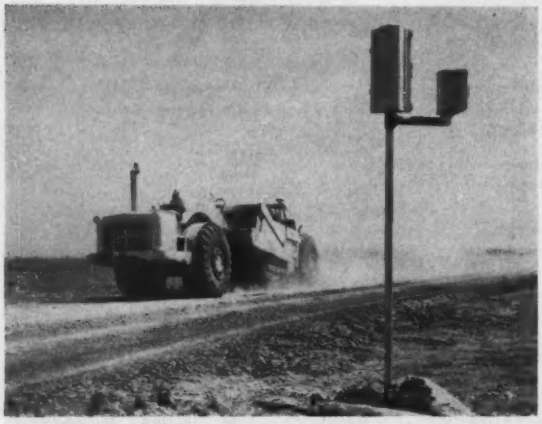
United Kingdom: **EDWARD E. SCHIRMER**
McGraw-Hill House, 95 Farrington St., London E.C. 4, England

Germany, Austria: **STAN KIMES**
McGraw-Hill Publishing Co., Inc., 85, Westendstrasse, Frankfurt/Main, Germany

Switzerland, Italy, France and Belgium: **MICHAEL R. ZEYNEL**
McGraw-Hill Publishing Co. Inc. 2, Place du Port, Geneva, Switzerland

Other Sales Offices:
St. Louis 8, Continental Bldg.
Pittsburgh 22: Four Gateway Center
Boston 16: Copley Square

# Methods Memo...



## It's Stop and Go on This Job

Operating earthmovers on an airport expansion project in Tulsa is almost like driving in city traffic. But running a light could be disastrous because the intersections are on a runway being used by aircraft while construction work is in progress. And of course, the planes have the right-of-way.

Standard Industries, Inc., of Tulsa is the contractor. They're building a series of ramps at the terminal site and moving the excavated 219,000 yd of dirt to a taxiway being constructed on the other side of the runway. Traffic lights on the haul road at either side of the runway signal the scraper operators whenever aircraft are approaching.

A special air-land control center operates the traffic lights. The center is housed in a mobile control tower that was borrowed from the Air National Guard. Manning the tower is Jack H. Huff, a veteran radio operator who knows airport procedures. He stays in radio contact with the airport's control tower personnel and monitors their conversations when incoming or outgoing aircraft are on ground control. Huff flashes a red light on the signals whenever aircraft are about to use the runway.

This procedure is sort of a first in earthmoving, and it's speeding up the work and insuring safe operating conditions for planes and haul units.

## Contractor Gives Speedy First Aid

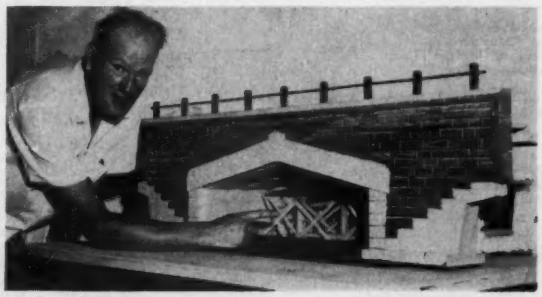
The doctor was 12-mi away, but it took only 40 min to get a man there from the middle of the Ohio River — thanks to the first aid facilities of S. J. Groves & Sons Co. They're building a dam and locks on the river near Chilo, Ohio.

Normal barge traffic was moving in the river when a tow boat, the St. Louis Zepher, radioed to the Groves tug by ship-to-shore radio. They had a man suffering from a heart attack. To save the victim, Groves dispatched an ambulance with a respirator and a first aid man. He went down to the cofferdam, boarded a tug, and went across the river to the tow boat.

The stricken man was transferred to the tug and brought to the unloading dock. Then he was placed in a basket stretcher; a crane lifted it to the top of the cofferdam. There the ambulance was waiting to rush the man to the doctor. The trip was completed only 40 min from the time the Groves tug received the first radio call.

## Electronic Road

An experimental device that visibly or audibly warns a motorist when he's too close to the pavement edge or centerline will be tested at General Motors Proving Grounds. The device, called Electro Lane, was developed in GM Research Laboratories. It consists of a wire imbedded in the road and coils on the car's bumper. When a car veers to either side, a warning light comes on; at extreme deviation a warning sound comes over a speaker.



## Spare Time Builder

It seems that working full time on construction projects is not enough for Jim Gerstenberg of Hendrickson Bros. Inc., Valley Stream, N. Y. He has worked on many parkway and bridge construction jobs, and in his spare time he works along the same lines, but only in miniature.

Jim's pet project is a replica of a bridge, complete with falsework and stone facing. In addition, he has made tiny ladders, scaffolds, vibrator heads, barricades, shovels, a job shanty, a concrete bucket, and a clearance warning bridge. And he has plans for many more projects like these.

# Construction Methods AND EQUIPMENT READER SERVICE HELPS YOU

...**GET MORE INFORMATION** about new products and services advertised or described editorially. Information is FREE. Postage paid. Just circle the key number on the Reader Service Card and drop in the mail.

...**ENTER YOUR NEW SUBSCRIPTION**—Simply fill out subscription card at right and get your own personal copy each month. We'll bill you later.

...**SEND FOR REPRINTS**—Editorial reprints described below are available. Simply circle the number corresponding to the reprint you want. You will be billed along with your order. Quantity prices furnished on request.

**PAVING... How To Get The Best Results**

R1 A 51-page booklet containing outstanding articles on the subject of paving. Covers bituminous surface treatments, mixed-in-place bituminous surfaces, bituminous penetration macadam, plant-mix bituminous pavements, preparation for concrete paving, batching and mixing concrete, placing and finishing concrete, jointing and curing of concrete paving, mixed-in-place pavements. Each 50¢

**CONCRETE MIXING AND PLACING**

R2 An 88-page booklet containing a series of articles on the fundamental principles of concreting for all types of structures. Subjects include: concreting equipment selection, application, and maintenance; production factors; form planning, design, and construction; design and control of concrete mixes; handling and placing concrete; underwater concreting. Each 50¢

**EARTHMOVING... An Art and a Science**

R3 A 64-page booklet dealing with the fundamentals of earthmoving. Subjects include: equipment selection and application; application of scrapers and rooters; equipment ownership and operating costs; production and cost estimates; maintenance and repair; operation of shovels, hoes, cranes, draglines, clamshells; excavator operating costs; engineering on the project. Each 50¢

**PRODUCING AGGREGATES**

R4 A 93-page booklet that is a comprehensive guide to equipment selection, plant layout, and efficient operation. Subjects include: types of aggregates; feeders and their application; crushers; screens and screening; conveyors; stationary plants; portable plants; washing plants; and plant maintenance. Each 60¢

**PRESTRESSED CONCRETE**

R5 A 20-page special report dealing with a variety of prestressing applications; commercial prestress – new market for contractors; pre-tensioning bed – assembly line for prestress products. Each 50¢

**EQUIPMENT MAINTENANCE GUIDE**

R6 A 36-page booklet in which 15 service experts detail the proper maintenance of crawler tractors, graders, scrapers, rollers, compressors, trenchers, crushers, trucks, cranes, asphalt plants, loaders, air tools, pavers, rock drills, wheel tractors. Each 50¢

**HOW TO IMPROVE CONTRACTOR-LABOR RELATIONS**

R7 An 8-page booklet dealing with the steps the contractor can take to improve labor relations, what unions are doing and can do, and hints for job supers to keep jobs moving. Each 25¢

**DOES YOUR INSURANCE PROGRAM *REALLY* PROTECT YOU?**

R8 A 12-page booklet by a construction insurance expert explains the importance of a sound program... how to strengthen liability coverage... how to protect your job and your property. Included is a check list of insurance for contractors. Each 25¢

**SURETY BONDS... Their Function, Value and Effect**

R9 An 8-page article discusses the differences between bonds and insurance coverages, tells how surety risks are evaluated, and describes various types of surety bonds. Each 25¢

**BLASTING AGENT SLASHES POWDER COSTS BY 75%**

R10 This editorial reprint deals with a blasting agent that cuts powder costs to 4.5 cents per yd of rock. Each 15¢



More reprints on back of this card

NAME _____ TITLE _____

COMPANY _____ TOTAL UNITS OF EQUIPMENT _____ TOTAL No. TRUCKS _____

ADDRESS _____

ORDER REPRINTS HERE ☐ INSIDE FRONT COVER ☐ INSIDE BACK COVER ☐ BACK COVER

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | R26 | 1 | 26 | 51 | 76 | 101 | 126 | 151 | 176 | 201 | 226 | 251 | 276 | 301 | 326 | 351 | 376 | 401 | 426 | 451 | 476 | 501 | 526 |
| R2 | R27 | 2 | 27 | 52 | 77 | 102 | 127 | 152 | 177 | 202 | 227 | 252 | 277 | 302 | 327 | 352 | 377 | 402 | 427 | 452 | 477 | 502 | 527 |
| R3 | R28 | 3 | 28 | 53 | 78 | 103 | 128 | 153 | 178 | 203 | 228 | 253 | 278 | 303 | 328 | 353 | 378 | 403 | 428 | 453 | 478 | 503 | 528 |
| R4 | R29 | 4 | 29 | 54 | 79 | 104 | 129 | 154 | 179 | 204 | 229 | 254 | 279 | 304 | 329 | 354 | 379 | 404 | 429 | 454 | 479 | 504 | 529 |
| R5 | R30 | 5 | 30 | 55 | 80 | 105 | 130 | 155 | 180 | 205 | 230 | 255 | 280 | 305 | 330 | 355 | 380 | 405 | 430 | 455 | 480 | 505 | 530 |
| R6 | R31 | 6 | 31 | 56 | 81 | 106 | 131 | 156 | 181 | 206 | 231 | 256 | 281 | 306 | 331 | 356 | 381 | 406 | 431 | 456 | 481 | 506 | 531 |
| R7 | R32 | 7 | 32 | 57 | 82 | 107 | 132 | 157 | 182 | 207 | 232 | 257 | 282 | 307 | 332 | 357 | 382 | 407 | 432 | 457 | 482 | 507 | 532 |
| R8 | R33 | 8 | 33 | 58 | 83 | 108 | 133 | 158 | 183 | 208 | 233 | 258 | 283 | 308 | 333 | 358 | 383 | 408 | 433 | 458 | 483 | 508 | 533 |
| R9 | R34 | 9 | 34 | 59 | 84 | 109 | 134 | 159 | 184 | 209 | 234 | 259 | 284 | 309 | 334 | 359 | 384 | 409 | 434 | 459 | 484 | 509 | 534 |
| R10 | R35 | 10 | 35 | 60 | 85 | 110 | 135 | 160 | 185 | 210 | 235 | 260 | 285 | 310 | 335 | 360 | 385 | 410 | 435 | 460 | 485 | 510 | 535 |
| R11 | R36 | 11 | 36 | 61 | 86 | 111 | 136 | 161 | 186 | 211 | 236 | 261 | 286 | 311 | 336 | 361 | 386 | 411 | 436 | 461 | 486 | 511 | 536 |
| R12 | R37 | 12 | 37 | 62 | 87 | 112 | 137 | 162 | 187 | 212 | 237 | 262 | 287 | 312 | 337 | 362 | 387 | 412 | 437 | 462 | 487 | 512 | 537 |
| R13 | R38 | 13 | 38 | 63 | 88 | 113 | 138 | 163 | 188 | 213 | 238 | 263 | 288 | 313 | 338 | 363 | 388 | 413 | 438 | 463 | 488 | 513 | 538 |
| R14 | R39 | 14 | 39 | 64 | 89 | 114 | 139 | 164 | 189 | 214 | 239 | 264 | 289 | 314 | 339 | 364 | 389 | 414 | 439 | 464 | 489 | 514 | 539 |
| R15 | R40 | 15 | 40 | 65 | 90 | 115 | 140 | 165 | 190 | 215 | 240 | 265 | 290 | 315 | 340 | 365 | 390 | 415 | 440 | 465 | 490 | 515 | 540 |
| R16 | R41 | 16 | 41 | 66 | 91 | 116 | 141 | 166 | 191 | 216 | 241 | 266 | 291 | 316 | 341 | 366 | 391 | 416 | 441 | 466 | 491 | 516 | 541 |
| R17 | R42 | 17 | 42 | 67 | 92 | 117 | 142 | 167 | 192 | 217 | 242 | 267 | 292 | 317 | 342 | 367 | 392 | 417 | 442 | 467 | 492 | 517 | 542 |
| R18 | R43 | 18 | 43 | 68 | 93 | 118 | 143 | 168 | 193 | 218 | 243 | 268 | 293 | 318 | 343 | 368 | 393 | 418 | 443 | 468 | 493 | 518 | 543 |
| R19 | R44 | 19 | 44 | 69 | 94 | 119 | 144 | 169 | 194 | 219 | 244 | 269 | 294 | 319 | 344 | 369 | 394 | 419 | 444 | 469 | 494 | 519 | 544 |
| R20 | R45 | 20 | 45 | 70 | 95 | 120 | 145 | 170 | 195 | 220 | 245 | 270 | 295 | 320 | 345 | 370 | 395 | 420 | 445 | 470 | 495 | 520 | 545 |
| R21 | R46 | 21 | 46 | 71 | 96 | 121 | 146 | 171 | 196 | 221 | 246 | 271 | 296 | 321 | 346 | 371 | 396 | 421 | 446 | 471 | 496 | 521 | 546 |
| R22 | R47 | 22 | 47 | 72 | 97 | 122 | 147 | 172 | 197 | 222 | 247 | 272 | 297 | 322 | 347 | 372 | 397 | 422 | 447 | 472 | 497 | 522 | 547 |
| R23 | R48 | 23 | 48 | 73 | 98 | 123 | 148 | 173 | 198 | 223 | 248 | 273 | 298 | 323 | 348 | 373 | 398 | 423 | 448 | 473 | 498 | 523 | 548 |
| R24 | R49 | 24 | 49 | 74 | 99 | 124 | 149 | 174 | 199 | 224 | 249 | 274 | 299 | 324 | 349 | 374 | 399 | 424 | 449 | 474 | 499 | 524 | 549 |
| R25 | R50 | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 | 300 | 325 | 350 | 375 | 400 | 425 | 450 | 475 | 500 | 525 | 550 |

**THIS CARD VOID AFTER JANUARY 3, 1961 • BE SURE TO FILL IN YOUR NAME ABOVE**


# Build Your Own Library of Money-Making Shortcuts

## *SUBSCRIBE NOW AT THIS LOW RATE!*

Enter my new subscription to Construction Methods, and bill me at the money-saving rate of only $4 for 3 full years. *(I save $2.)*

Check ☐ if you wish 1 year for $2

NAME _____ TITLE OR POSITION _____

All spaces must be filled in to start service

ADDRESS ☐ Home ☐ Office _____

CITY _____ ZONE # _____ STATE _____

S-

COMPANY _____

(If self-employed, write "SELF" above)

M-

NATURE OF BUSINESS* _____

*If contracting, please check type: ☐ Building ☐ Highways & Streets ☐ Other heavy construction ☐ Both building and non-building

11/60

Rates outside U.S.A.

Canada ☐ 1 year $4 ☐ 3 years $8

Latin America ☐ 1 year $10 ☐ 3 years $20

Other Foreign ☐ 1 year $15 ☐ 3 years $30



NAME _____ TITLE _____

COMPANY _____ TOTAL UNITS OF EQUIPMENT _____ TOTAL No. TRUCKS _____

ADDRESS _____

ORDER REPRINTS HERE ☐ INSIDE FRONT COVER ☐ INSIDE BACK COVER ☐ BACK COVER

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | R26 | 1 | 26 | 51 | 76 | 101 | 126 | 151 | 176 | 201 | 226 | 251 | 276 | 301 | 326 | 351 | 376 | 401 | 426 | 451 | 476 | 501 | 526 |
| R2 | R27 | 2 | 27 | 52 | 77 | 102 | 127 | 152 | 177 | 202 | 227 | 252 | 277 | 302 | 327 | 352 | 377 | 402 | 427 | 452 | 477 | 502 | 527 |
| R3 | R28 | 3 | 28 | 53 | 78 | 103 | 128 | 153 | 178 | 203 | 228 | 253 | 278 | 303 | 328 | 353 | 378 | 403 | 428 | 453 | 478 | 503 | 528 |
| R4 | R29 | 4 | 29 | 54 | 79 | 104 | 129 | 154 | 179 | 204 | 229 | 254 | 279 | 304 | 329 | 354 | 379 | 404 | 429 | 454 | 479 | 504 | 529 |
| R5 | R30 | 5 | 30 | 55 | 80 | 105 | 130 | 155 | 180 | 205 | 230 | 255 | 280 | 305 | 330 | 355 | 380 | 405 | 430 | 455 | 480 | 505 | 530 |
| R6 | R31 | 6 | 31 | 56 | 81 | 106 | 131 | 156 | 181 | 206 | 231 | 256 | 281 | 306 | 331 | 356 | 381 | 406 | 431 | 456 | 481 | 506 | 531 |
| R7 | R32 | 7 | 32 | 57 | 82 | 107 | 132 | 157 | 182 | 207 | 232 | 257 | 282 | 307 | 332 | 357 | 382 | 407 | 432 | 457 | 482 | 507 | 532 |
| R8 | R33 | 8 | 33 | 58 | 83 | 108 | 133 | 158 | 183 | 208 | 233 | 258 | 283 | 308 | 333 | 358 | 383 | 408 | 433 | 458 | 483 | 508 | 533 |
| R9 | R34 | 9 | 34 | 59 | 84 | 109 | 134 | 159 | 184 | 209 | 234 | 259 | 284 | 309 | 334 | 359 | 384 | 409 | 434 | 459 | 484 | 509 | 534 |
| R10 | R35 | 10 | 35 | 60 | 85 | 110 | 135 | 160 | 185 | 210 | 235 | 260 | 285 | 310 | 335 | 360 | 385 | 410 | 435 | 460 | 485 | 510 | 535 |
| R11 | R36 | 11 | 36 | 61 | 86 | 111 | 136 | 161 | 186 | 211 | 236 | 261 | 286 | 311 | 336 | 361 | 386 | 411 | 436 | 461 | 486 | 511 | 536 |
| R12 | R37 | 12 | 37 | 62 | 87 | 112 | 137 | 162 | 187 | 212 | 237 | 262 | 287 | 312 | 337 | 362 | 387 | 412 | 437 | 462 | 487 | 512 | 537 |
| R13 | R38 | 13 | 38 | 63 | 88 | 113 | 138 | 163 | 188 | 213 | 238 | 263 | 288 | 313 | 338 | 363 | 388 | 413 | 438 | 463 | 488 | 513 | 538 |
| R14 | R39 | 14 | 39 | 64 | 89 | 114 | 139 | 164 | 189 | 214 | 239 | 264 | 289 | 314 | 339 | 364 | 389 | 414 | 439 | 464 | 489 | 514 | 539 |
| R15 | R40 | 15 | 40 | 65 | 90 | 115 | 140 | 165 | 190 | 215 | 240 | 265 | 290 | 315 | 340 | 365 | 390 | 415 | 440 | 465 | 490 | 515 | 540 |
| R16 | R41 | 16 | 41 | 66 | 91 | 116 | 141 | 166 | 191 | 216 | 241 | 266 | 291 | 316 | 341 | 366 | 391 | 416 | 441 | 466 | 491 | 516 | 541 |
| R17 | R42 | 17 | 42 | 67 | 92 | 117 | 142 | 167 | 192 | 217 | 242 | 267 | 292 | 317 | 342 | 367 | 392 | 417 | 442 | 467 | 492 | 517 | 542 |
| R18 | R43 | 18 | 43 | 68 | 93 | 118 | 143 | 168 | 193 | 218 | 243 | 268 | 293 | 318 | 343 | 368 | 393 | 418 | 443 | 468 | 493 | 518 | 543 |
| R19 | R44 | 19 | 44 | 69 | 94 | 119 | 144 | 169 | 194 | 219 | 244 | 269 | 294 | 319 | 344 | 369 | 394 | 419 | 444 | 469 | 494 | 519 | 544 |
| R20 | R45 | 20 | 45 | 70 | 95 | 120 | 145 | 170 | 195 | 220 | 245 | 270 | 295 | 320 | 345 | 370 | 395 | 420 | 445 | 470 | 495 | 520 | 545 |
| R21 | R46 | 21 | 46 | 71 | 96 | 121 | 146 | 171 | 196 | 221 | 246 | 271 | 296 | 321 | 346 | 371 | 396 | 421 | 446 | 471 | 496 | 521 | 546 |
| R22 | R47 | 22 | 47 | 72 | 97 | 122 | 147 | 172 | 197 | 222 | 247 | 272 | 297 | 322 | 347 | 372 | 397 | 422 | 447 | 472 | 497 | 522 | 547 |
| R23 | R48 | 23 | 48 | 73 | 98 | 123 | 148 | 173 | 198 | 223 | 248 | 273 | 298 | 323 | 348 | 373 | 398 | 423 | 448 | 473 | 498 | 523 | 548 |
| R24 | R49 | 24 | 49 | 74 | 99 | 124 | 149 | 174 | 199 | 224 | 249 | 274 | 299 | 324 | 349 | 374 | 399 | 424 | 449 | 474 | 499 | 524 | 549 |
| R25 | R50 | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 | 300 | 325 | 350 | 375 | 400 | 425 | 450 | 475 | 500 | 525 | 550 |

**THIS CARD VOID AFTER FEBRUARY 28, 1961 • BE SURE TO FILL IN YOUR NAME ABOVE**

FIRST CLASS
PERMIT NO. 64
(Sec. 34.9 P.L.&R.)
NEW YORK, N. Y.

**BUSINESS REPLY MAIL**
No Postage Stamp Necessary If Mailed In The United States

postage will be paid by

**Construction Methods** AND EQUIPMENT

A McGraw-Hill Publication
330 West 42nd Street
New York 36, New York

READER SERVICE DEPT.
28th FLOOR

FIRST CLASS
PERMIT NO. 64
(Sec. 34.9 P.L.&R.)
NEW YORK, N. Y.

BUSINESS REPLY MAIL
No Postage Stamp Necessary If Mailed In The United States

postage will be paid by

Construction Methods AND EQUIPMENT

A McGraw-Hill Publication
330 West 42nd Street
New York 36, New York

FIRST CLASS
PERMIT NO. 64
(Sec. 34.9 P.L.&R.)
NEW YORK, N. Y.

BUSINESS REPLY MAIL
No Postage Stamp Necessary If Mailed In The United States

postage will be paid by

Construction Methods AND EQUIPMENT

A McGraw-Hill Publication
330 West 42nd Street
New York 36, New York

READER SERVICE DEPT.
28th FLOOR

**Construct Methods**

**CRAWLER TRACTORS**

**R11** List covers 9 manu with horsepower ra gives dimensions, drawbar pull.

**SELF-PROPELLED SCRAPERS**

**R12** Struck capacities of range from 5 to 45 mover includes data ating speeds. Othe and weight distribut

**TRACTOR-DRAWN SCRAPERS**

**R13** Chart gives overall cluding weight dist 43 scrapers with st yd built by 9 manu

**STEEL ROLLERS**

**R14** Tandem and three- at least 6,000 lb ar manufacturers and trains, over-all and paction.

**Construct Methods**

# READER SERVICE continued

## ...SEND FOR REPRINTS (while they last)

Use the postcards at the left to make your selection of the editorial reprints you want. Be sure to circle key number corresponding to reprint you want and fill in address blanks before mailing the postpaid reply card. Pay when you are billed. Quantity prices furnished on request.

## COMPARATIVE SPECIFICATION CHARTS

nanufacturers and 45 models of tractors
ver ratings from 30 to 425. Other data
ions, speeds, engine description, and
Each 10¢

PERS
ies of the 44 models listed on this chart
to 45 cu yd. Information on the prime
s data on engine, transmission, and oper-
Other data gives over-all dimensions
tribution. Chart covers 11 manufacturers.
Each 10¢

APERS
verall dimensions and general data in-
t distribution and type of controls for
ith struck capacities from 2½ to 54 cu
manufacturers. Each 10¢

hree-wheel rollers with a dry weight of
lb are listed in this chart covering 12
and 78 models. Data covers power
and roll dimensions, weights, and com-
Each 10¢

**PNEUMATIC-TIRED ROLLERS**

R15 Compaction figures for 35 models of rollers are given in this chart covering 12 manufacturers. Other information covers weights, overall dimensions, wheels, and power train. Each 10¢

**MOTOR GRADERS**

R16 Information on weights, dimensions, engines, and travel speeds in this chart covers 59 models of graders built by 7 manufacturers. Also included are data on blades and blade controls and scarifiers. Each 10¢

**PORTABLE COMPRESSORS**

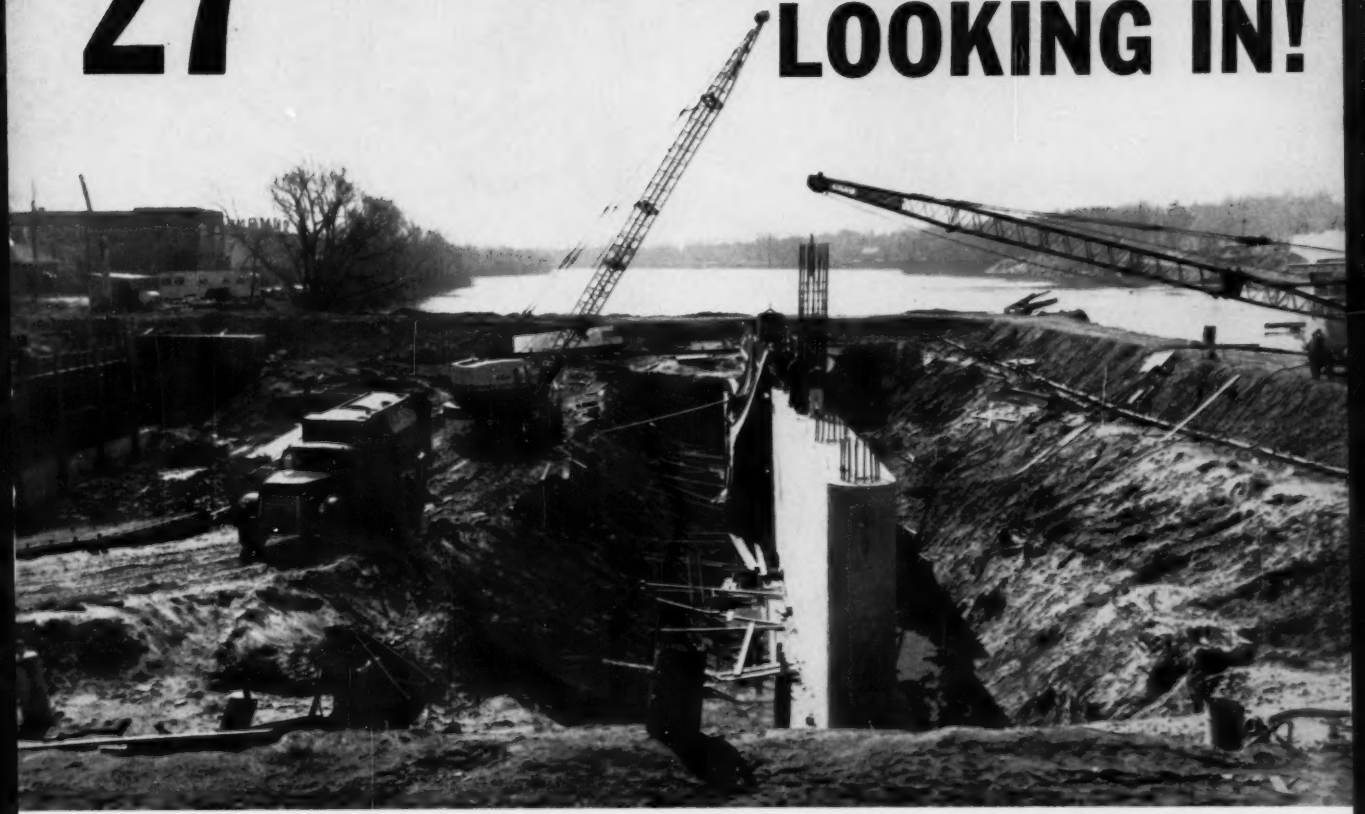
R17 List includes 19 manufacturers with 48 models of rotary and reciprocating portable compressors delivering 100 cfm at 100 psi or more. Information includes dimensions and mechanical data on compressors and engines. Each 10¢

**TRACTOR SHOVELS**

R18 Integrally built tractor shovels are available in 93 models by 18 manufacturers. Chart includes both crawler and wheel-mounted units with bucket capacities ranging from ½ to 6 cu yd. Other information covers engines and power trains, maximum speeds, and over-all dimensions. Each 10¢

There is no charge for
CONSTRUCTION METHODS and EQUIPMENT's
Reader Service except for subscriptions and reprints.

# 27′ OF WATER...OUTSIDE-LOOKING IN!



Owner: N. J. State Highway Dept. Pumping Contractors: American Dewatering Corporation, Rockaway, N. J.

Within the protection of an earth-filled cofferdam kept dry by Moretrench Wellpoints, Public Constructors, Inc., of Blackwood, N. J., excavate for Piers #5 and #6 for a bridge over the Passaic River —part of the new Route 80 Expressway which sweeps westward across the state.

This is part two of a $2,758,000 contract. Five piers on the opposite side of the river were constructed in the same economical way.

Soil consists of layers of silt, sand, gravel and bog with hardpan at subgrade. Moretrench Wellpoints successfully stabilized this material. They

- eliminated costly sheeting,
- freed the contractor to excavate rapidly with a dragline,
- effected many other economies which are possible only when you work—*in the dry*.

**Ask us for a realistic estimate on water control for your wet job.**

## Moretrench Corporation

389 Main Street
Hackensack, N. J.
HUbbard 9-7676
New York Tel.: CO 7-2283

4900 S. Austin Ave.
Chicago 38, Illinois
POrtsmouth 7-4212

7701 Interbay Blvd.
Tampa 9, Florida
TAmpa 61-1881

315 W. 25th St.
Houston 8, Texas
UNderwood 4-7774

Rockaway
New Jersey
OAkwood 7-2100

WESTERN REPRESENTATIVE: Andrews Machinery of Washington, Inc., Seattle 4, Washington
CANADIAN REPRESENTATIVE: Geo. W. Crothers Limited, Toronto, Ontario
BRAZILIAN REPRESENTATIVE: Oscar Taves & Co., Ltd., Rio de Janeiro

# "TIMKEN® CARBIDE INSERT BITS AVERAGED 50% MORE FOOTAGE THAN EXPECTED"

**Special report from Montag-Halvorson-McLaughlin & Associates**

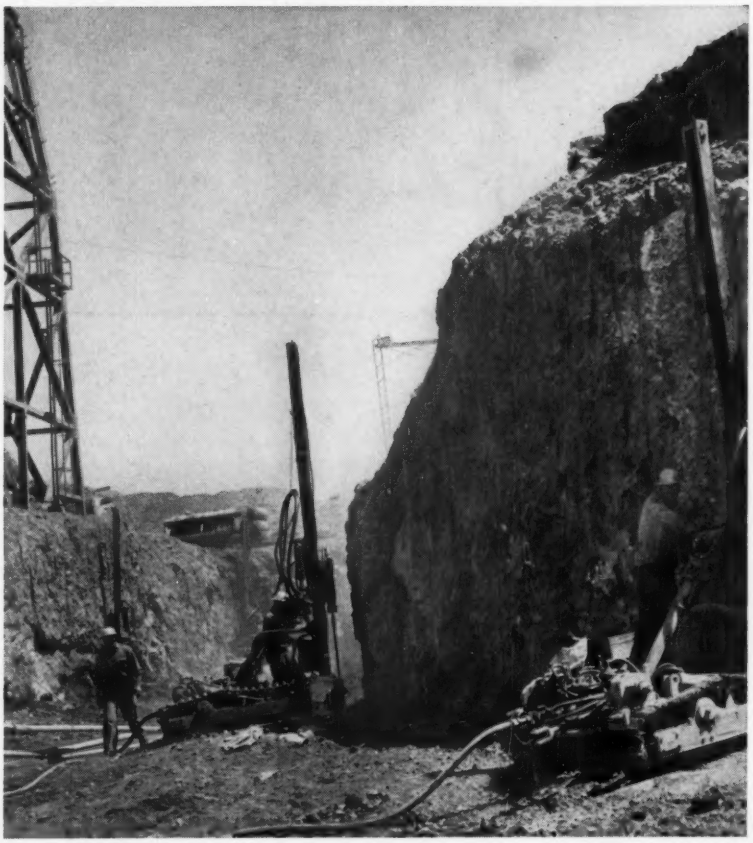
•

**Location: John Day dam project on the Columbia River, 32 mi. from The Dalles, Ore.**

•

**Operating Conditions Lava-Basalt and Flo-Breccia**

Accurate footage records show that Montag-Halvorson-McLaughlin & Associates of Portland, Ore., drilled over 3,000 feet per bit in abrasive Lava-Basalt and Flo-Breccia. Timken® bit quality, plus regular bit reconditioning and proper maintenance of drilling equipment paid off in 50% more feet per bit over original estimates.



## Which Timken Bit Should You Use?

Your most economical bit in hard, abrasive ground is the Timken carbide insert bit. In softer ground, use the low-cost Timken all-steel multi-use bit. They're interchangeable in the same thread series; you can switch bits as the ground changes. Dozens of Timken bits fit the same drill steel. Bit bodies are made of Timken electric furnace fine alloy steel, have special shoulder unions to protect against drilling impact. Let us help you select the right Timken bit for your job. The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits.

**TIMKEN®**
**removable rock bits**